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3924 MEADE ST.
DENVER, COLORADO

CONTENTS

TRADE NAME	MODEL	SET AND FOLDER NO.
Admiral	6A21, 6A22, 6A23 (Ch. 6A2)	103-1
Admiral	26R25, 26R26, 26R35, 26R36, 26R37 (Ch. 24H1), 26X35, 26X36, 26X37 (Ch. 24D1), 26X46 (Ch. 24H1), 29X15, 29X17 (Ch. 24F1), 36X36, 36X37 (Ch. 24E1 & Radio Ch. 5B2), 39X16, 39X16A, 39X17A (Ch. 24G1 & Radio Ch. 5B2) Tel. Rec.	103-2
Aircastle	TD-6	103-3
Andrea	CO-VK15, CO-VK16 (Ch. VK1516) Tel. Rec.	103-4
Automatic	TV-1249, TV-1250 Tel. Rec.	103-5
Automatic	F-100	103-6
Coronado	05RA4-43-9876A	103-7
Emerson	625 (Ch. 120105B)	103-8
Espey	31	103-9
Motorola	800	103-10
National	NC-TV-10C, T, W, NC-TV-12C, W, NC-TV-1001, NC-TV-1025, NC-TV-1201, NC-TV-1225, NC-TV-1226 Tel. Rec. (Prod. Change, Bul. 1)	103-19
Philco	M-20 Record Changer	103-11
Policealarm	PR-8	103-12
RCA Victor	BX6 (Ch. RC-1082)	103-13
Raytheon	A-10DX24, B-10DX22, 10DX22, 10AXF43 Tel. Rec. (Prod. Change, Bul. 1)	103-19
Scott (E. H.)	510	103-14
Sentinel	IU312PG, IU312PW, 312PG, 312PW	103-15
Stromberg-Carlson	TC-10 Tel. Rec. (Prod. Change, Bul. 1)	103-19
Sylvania	1-076, 1-128 (Ch. 1-108) Tel. Rec. (Prod. Change, Bul. 2)	103-20
Sylvania	1-250, 1-251, 1-252, 510B, 510H, 510W (Ch. 1-215)	103-16
Westinghouse	H-617T12 (Ch. V-2150-176), H-618T16 (Ch. V-2150-186), H-619T12 (Ch. V-2150-176), H-619T12U (Ch. V-2150-176U), H-620K16 (Ch. V-2150-186) Tel. Rec.	103-17
Zenith	G724 (Ch. 7G02)	103-18

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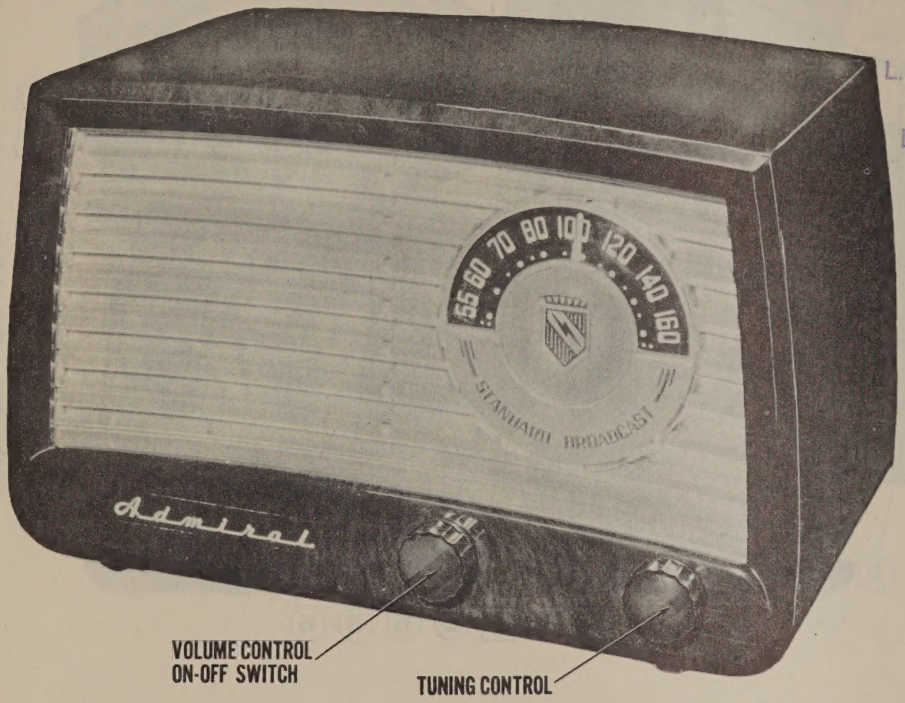

ADMIRAL MODEL 6A22

TRADE NAME	Admiral, Models 6A21, 6A22, 6A23 (Ch. 6A2)
MANUFACTURER	Admiral Corp. 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (SIX)	Types 12SK7 IF Amp., 12SA7 Converter, 12SK7 IF Amp., 12SQ7 DET-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC -DC RATING .26 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer in horizontal position parallel with base of dial. Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to pin 8 (Grid) of 12SA7 (V2). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to pin 4 (Grid) of 12SK7 (V1). Low side to B-.	1620KC	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	"	"	"	A7	"

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PARTS LIST AND DESCRIPTIONS

ADMIRAL MODEL 6A22

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	12SK7	12SK7	8N	
V2	Converter	12SA7	12SA7	8R	
V3	IF Amp.	12SK7	12SK7	8N	
V4	DET.-AVC-AF	12SQ7	12SQ7	8Q	
V5	Power Output	35L6GT	35L6GT	7AC	
V6	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	70	150	67A17	PRSA150/80-		EDL8415		TVA-2640	Filter-Red
B	30	150		40					Filter-Yellow
C2	.1	200	64B1-30	P288-1		PTE4P1		TM-1	AVC Filter
C3	50		65B6-4	GP50M	D6-500	5W5Q5	GPIK-50	1FM-45	Osc. Grid Cap.
C4	.05	400	64B1-22	P488-05		PTE4S5		TM-15	Tuning Cap. Isolation
C5A	100		*	GP100M	D6-101	5W5T1	GPIK-100	1FM-31	Diode RF Filter
B	100			GP100M	D6-101	5W5T1	GPIK-100	1FM-31	Diode RF Filter
C6	.01	400	64B1-25	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C7A	250		†	GP250M	D6-251	5W5T25	GP2K-250	1FM-325	AF Amp. Plate
B	10000			BPD-10	D6-103	PTE4S1	811-01	36C1	Audio Coupling
C8	.1	200	64B1-30	P288-1		PTE4P1		TM-1	AF Amp. Dec.
C9	.02	400	64B1-24	P488-02		PTE4S2		TM-12	Output Plate
C10	.18	200	64A2-2	P288-15		GT4P2		72P53	Line Isolation
C11	.05	400	64B1-22	P488-05		PTE4S5		TM-15	Line Filter

* Items C5A, C5B and R4 are combined into one unit obtainable under MFGR'S Part No. 63A3-1.
† Items C7A, C7B , R6A and R6B are combined into one unit obtainable under MFGR'S Part No. 63A5-1.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	75B1-36	Q13-137	AG-63-Z	BSK-70-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

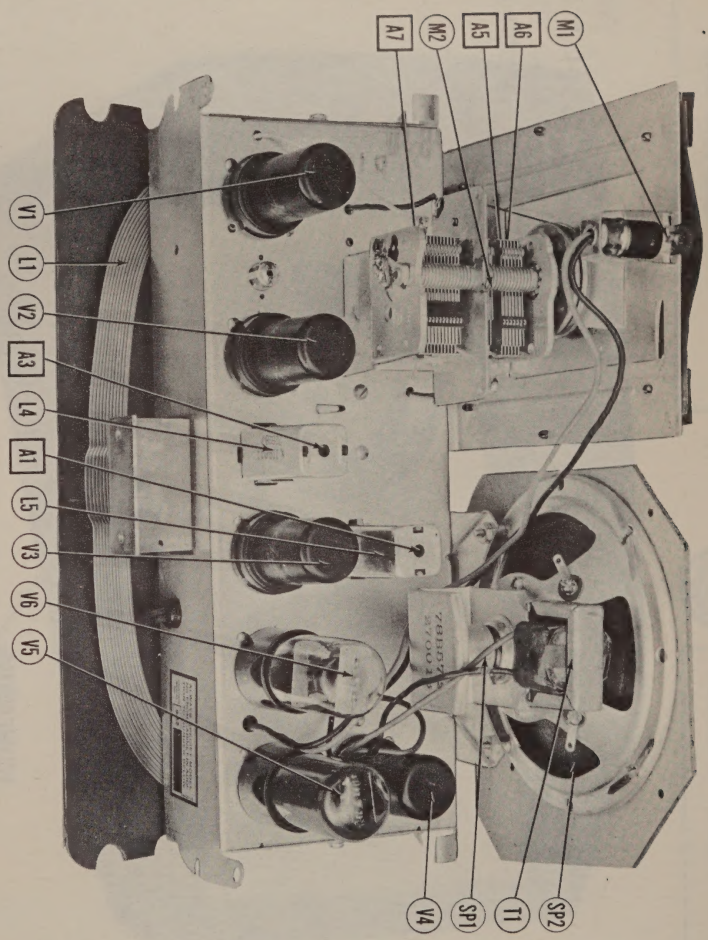
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	60B8-223	BTS-22K	Osc. Grid
R3	1.2 Meg.	½	60B8-125	BTS-1.2 Meg.	AVC Network
R4	47KΩ	½	*	BTS-47K	Diode Filter
R5	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	AF Grid
R6A	470KΩ	½	†	BTS-470K	AF Plate
B	470KΩ	½	†	BTS-470K	Output Grid
R7	47KΩ	½	60B8-473	BTS-47K	AF Plate Decoupling
R8	150Ω	½	60B8-151	BW-½-150	Output Cathode
R9	1000Ω	1	60B28-2	BTA-1000	Filter
R10	33Ω	1	60B28-3		Surge Limiter
R11	150KΩ	1	60B8-154	BTA-150K	Isolation

† Items R6A, R6B, C7A and C7B are combined into one unit obtainable under MFGR'S Part No. 63A5-1
* Items R4, C5A and C5B are combined into one unit obtainable under MFGR'S Part No. 63A3-1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2750Ω	3.8Ω	220Ω	.7Ω	Part of SP1	A-3332 ①	A-3025 ①		① Bend mounting tabs down and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105 ②		
SP1	PM	3.8Ω	78B57-2	MOD. P5-X	5A07 ②	② Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	4 7/8"	9/16"				

R F COILS

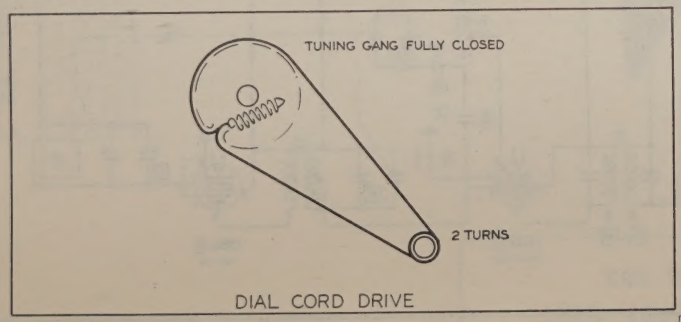
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Loop Ant.	3.8Ω		69C19-1		Includes cabinet back
L2	RF Coil	2.1Ω	11Ω	69A115-1		
L3	Osc. Coil	8Ω		69A52-2	14-1073	Tap at 1Ω
L4	1st IF	20Ω	20Ω	72B28-7	16-6758	
L5	2nd IF	20Ω	20Ω	72B28-7	16-6758	

DIAL LIGHTS

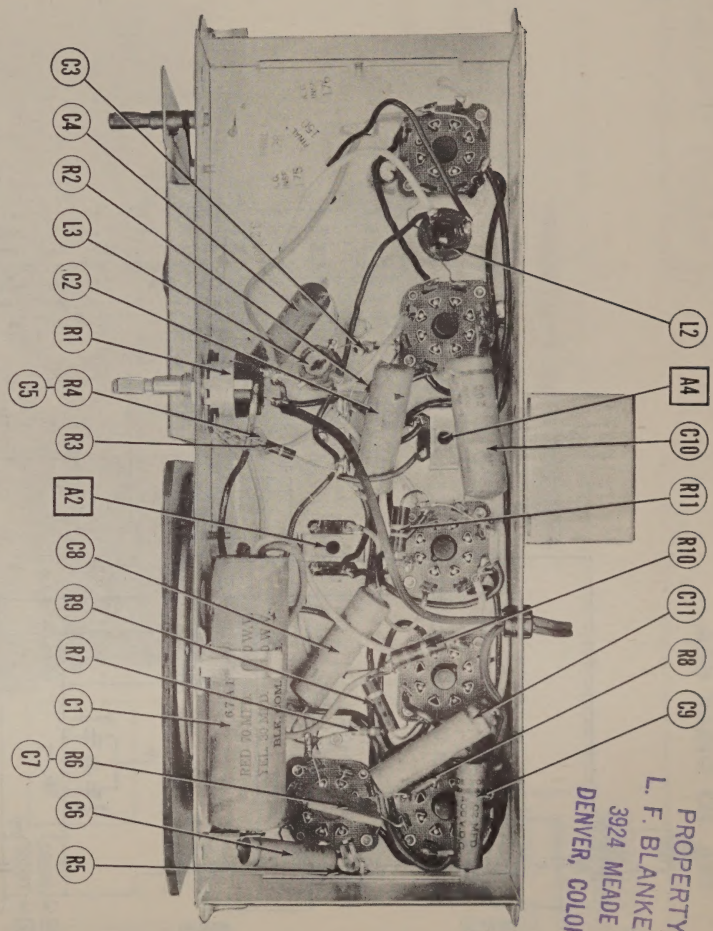
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA ADMIRAL PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	81A1-8		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M2	3 Gang Var. Cap.	68B33-2	(33-477MMF, 17-258MMF, 15-155MMF)
	Dial Pointer	25A39	
	Cabinet	34D25-1	Model 6A21
	Cabinet	34D25-2	Model 6A22
	Cabinet	34D25-3	Model 6A23
	Knob	33A21-11	Model 6A21
	Knob	33A21-12	Model 6A22
	Knob	33A21-13	Model 6A23



CHASSIS—BOTTOM VIEW



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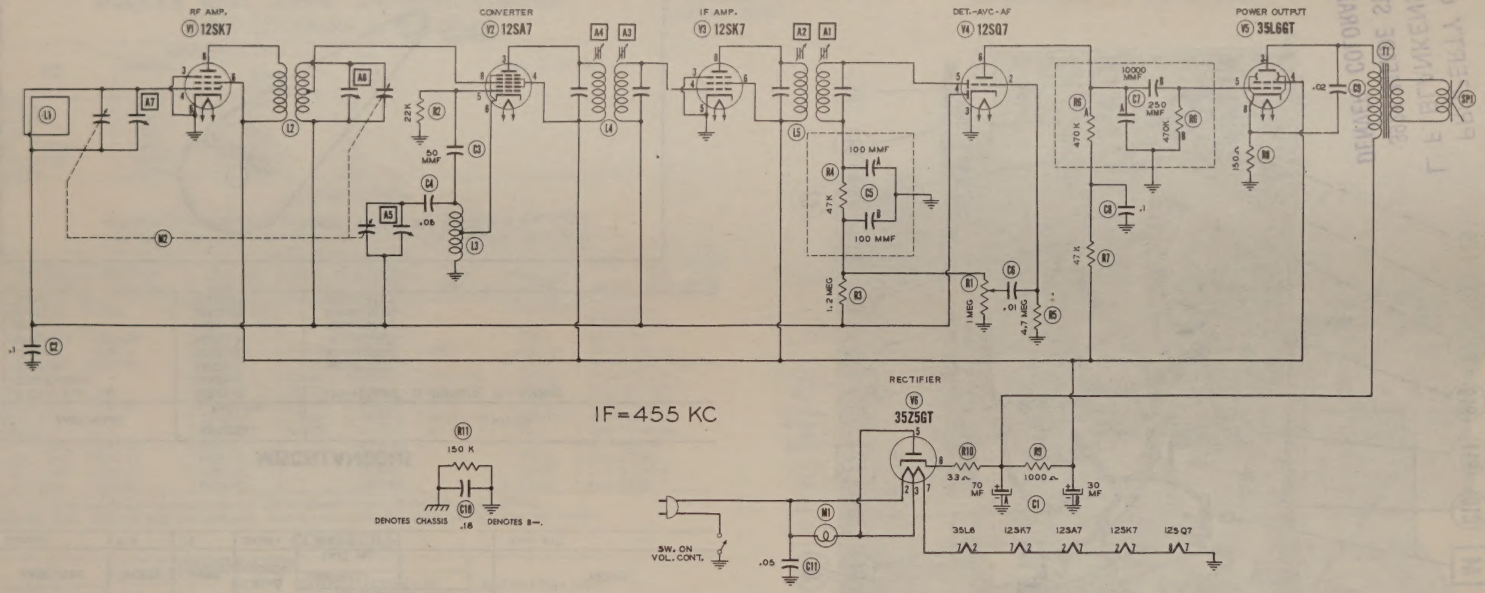

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SK7	0V.	26VAC	0V.	-.5VDC	0V.	75VDC	13VAC	75VDC
V 2	12SA7	0V.	39VAC	75VDC	75VDC	8-8.5VDC	0V.	26VAC	-.5VDC
V 3	12SK7	0V.	39VAC	0V.	-.5VDC	0V.	75VDC	50VAC	75VDC
V 4	12SQ7	0V.	-.7VDC	0V.	-.5VDC	-.2VDC	36VDC	0V.	13VAC
V 5	35L6GT	0V.	50VAC	100VDC	75VDC	0V.	0V.	85VAC	4.7VDC
V 6	35Z5GT	0V.	117VAC	112VAC	75VDC	112VAC	110VDC	85VAC	110VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SK7	150KΩ	28Ω	0Ω	2.2 Meg.	0Ω	†1000Ω	14Ω	†1000Ω
V 2	12SA7	150KΩ	43Ω	†1000Ω	†1000Ω	22KΩ	1Ω	28Ω	2.2 Meg.
V 3	12SK7	150KΩ	42Ω	0Ω	2.2 Meg.	0Ω	†1000Ω	56Ω	†1000Ω
V 4	12SQ7	150KΩ	4.7Meg.	0Ω	2.2 Meg.	1 Meg.	†520KΩ	0Ω	14Ω
V 5	35L6GT	Inf.	56Ω	†250Ω	†1000Ω	470KΩ	0Ω	90Ω	150Ω
V 6	35Z5GT	Inf.	120Ω	115Ω	†1000Ω	115Ω	†33Ω	90Ω	125KΩ

† MEASURED FROM PIN 8 OF V6.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

ADMIRAL CHASSIS
24D1, 24E1, 24F1, 24G1, 24H1
AND RADIO CH. 5B2

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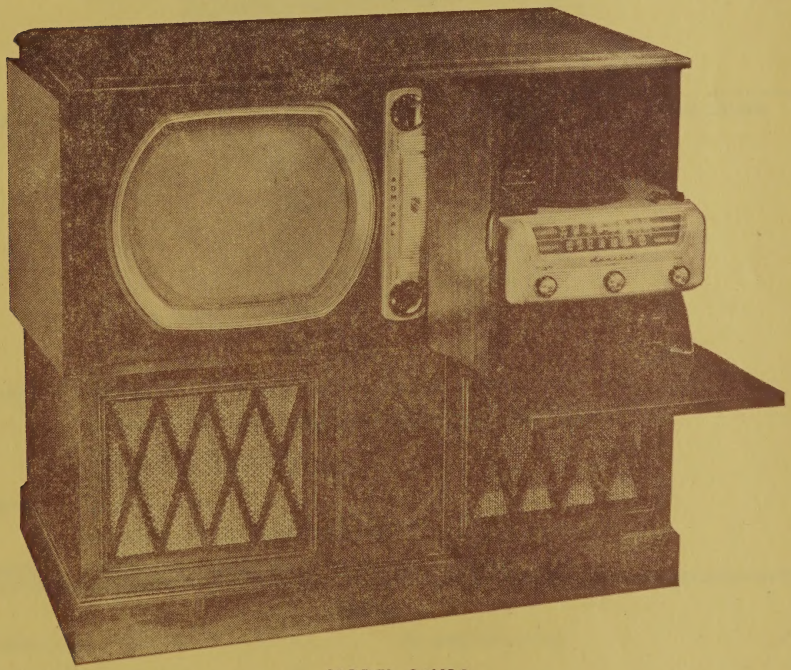

MODEL 36X36

ADMIRAL CHASSIS
24D1, 24E1, 24F1, 24G1, 24H1
AND RADIO CH. 5B2

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Date 8/50 Set No. 103—Folder No. 2

PHOTOFACT* Folder
*TRADE MARK

ADMIRAL
CHASSIS 24D1, 24E1, 24F1, 24G1, 24H1

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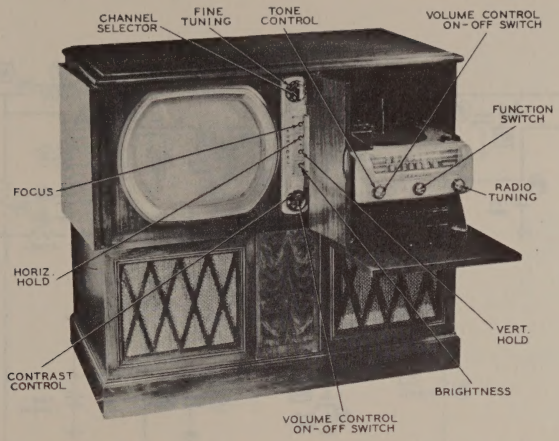

ADMIRAL MODEL 36X36

TRADE NAME	Admiral	MODEL	TV CHASSIS	RADIO CHASSIS
		26R25, 26R26, 26R35, 26R36, 26R37	24H1	
		26X35, 26X36, 26X37	24D1	
		26X45, 26X46	24H1	
		29X16, 29X17	24F1	
		36X36, 36X37	24E1	5B2
		39X16, 39X16A, 39X17, 39X17A	24G1	5B2
MANUFACTURER	Admiral Corp., 201 E. North Water St., Chicago 11, Illinois			
TYPE SET	TV-AM-FM-Phono Combination Receiver (Some models "TV" only)			
TUBES	Twenty Four (TV only models) Twenty Nine (Combination models)			
POWER SUPPLY	110-120 Volts AC-60 Cycle			
RATING	2.1 Amp. at 117 Volts AC (TV Operation)			
TUNING RANGES	TV Channels 2 thru 13, FM 88-108MC, AM 540-1620KC			

INDEX

Alignment Instructions - - - - - - - - - - 6, 7
Disassembly Instructions - - - - - - - - - - 13
Horiz. Sweep Circuit Adjustment - - - - - - 13
Parts List and Description - - - - - - - - 14, 15, 16
Photographs
Cabinet-Rear View - - - - - - - - - 13
Capacitor Identification - - - - - - - - 11, 18
Chassis-Top View - - - - - - - - - 3, 7
Photographs (continued)
RF Tuner - - - - - - - - - - - - - 10
Resistor Identification - - - - - - - - - 12, 17
Trans., Inductor and Alignment Identification - - - - - 4, 9
Schematic - - - - - - - - - - - - - 2
Tube Placement Chart - - - - - - - - - 5
Voltage and Resistance Measurements - - - - - 8

FOR SERVICE INFORMATION ON RADIO CHASSIS 5B2 SEE PHOTOFACT SET #100 FOLDER #1

RECORD CHANGER UNIT-ADMIRAL RC-500

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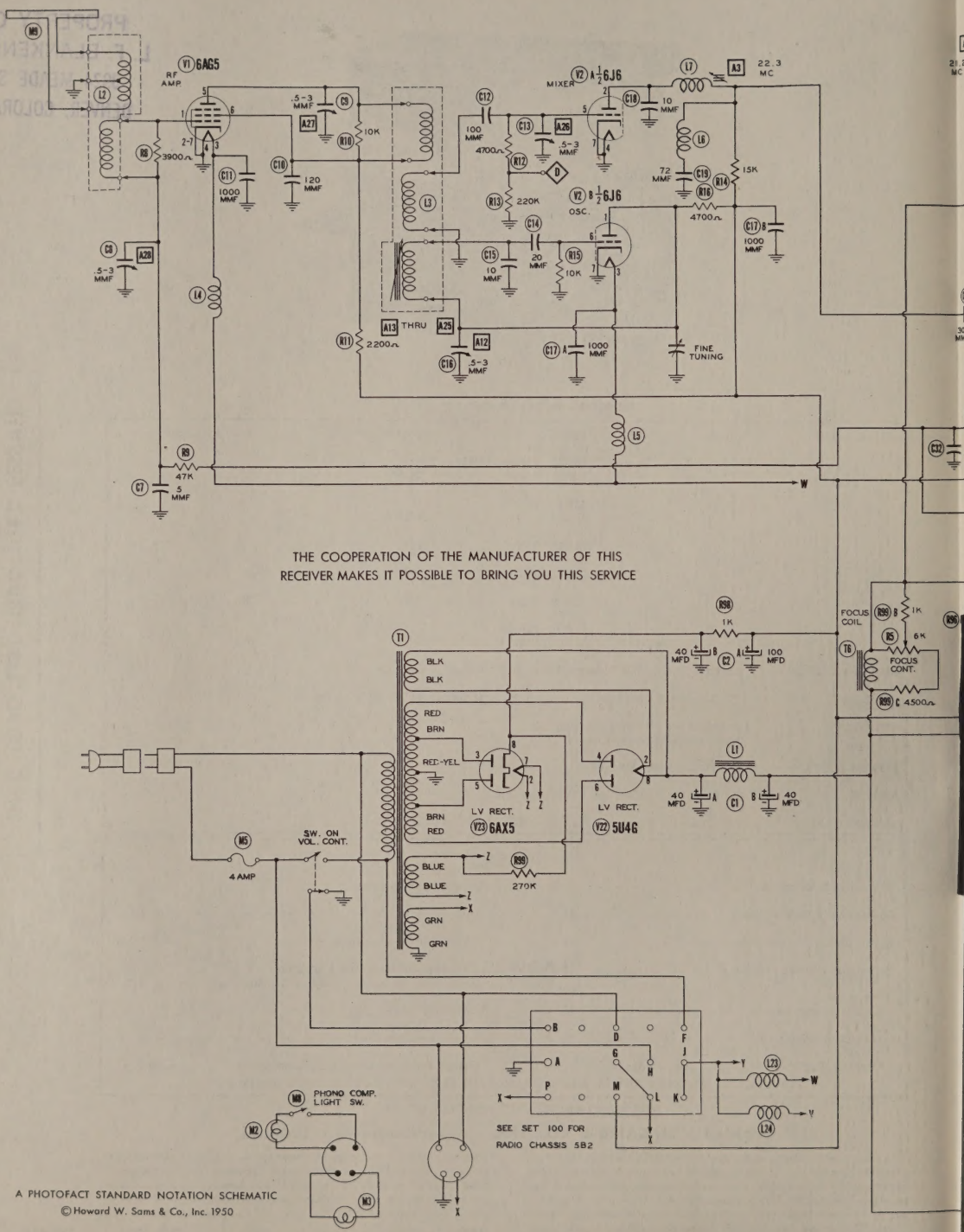
ADMIRAL
CHASSIS 24D1, 24E1, 24F1, 24G1, 24H1



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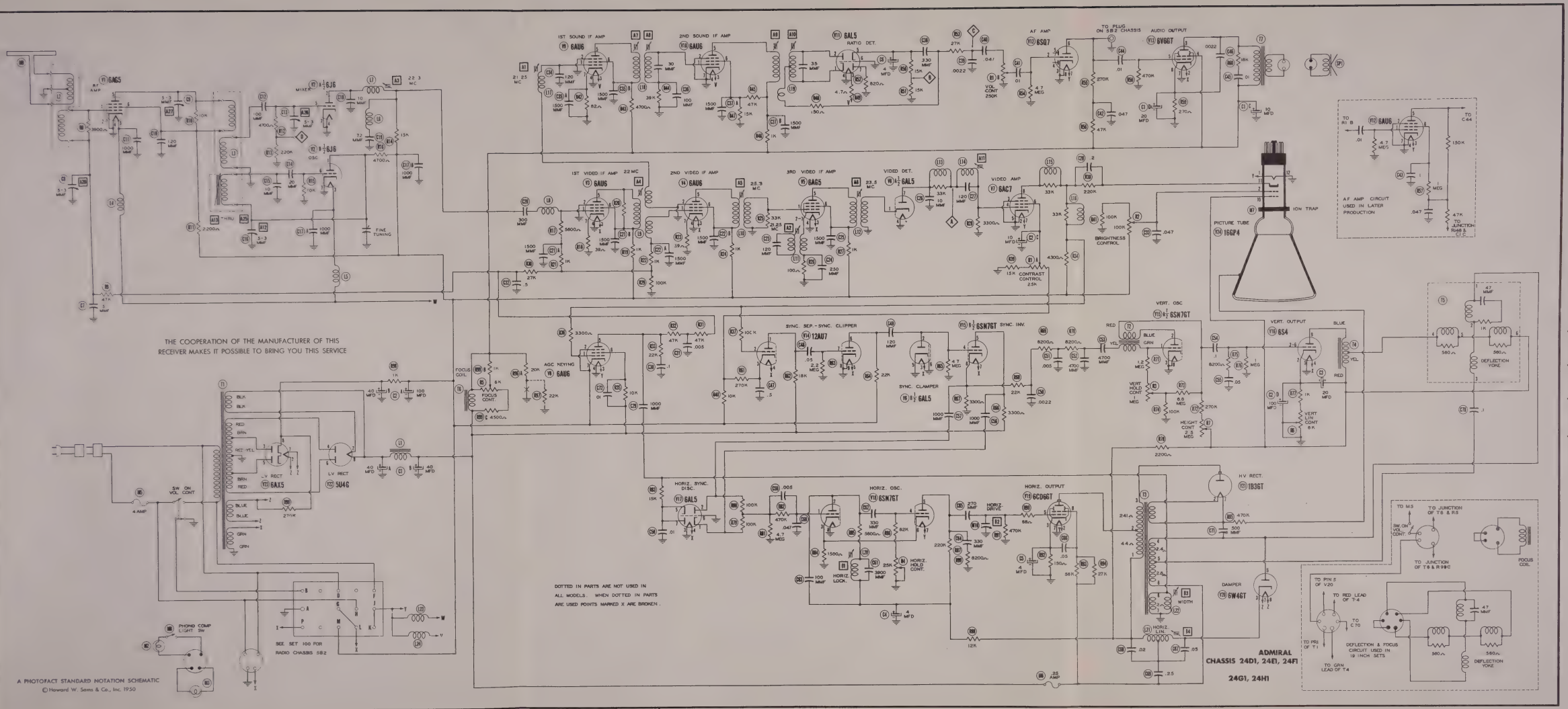
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SEE SET 100 FOR RADIO CHASSIS 582
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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ADMIRAL
CHASSIS 24D1, 24E1, 24F1
24G1, 24H1
1ST SOUND IF AMP
2ND SOUND IF AMP
RATIO DET.
AF AMP
AUDIO OUTPUT
1ST VIDEO IF AMP
2ND VIDEO IF AMP
3RD VIDEO IF AMP
VIDEO DET.
VIDEO AMP
PICTURE TUBE
ION TRAP
BRIGHTNESS CONTROL
CONTRAST CONTROL
AGC KEYING
SYNC. SEP. - SYNC. CLIPPER
SYNC. CLAMPER
SYNC. INV.
VERT. OSC
VERT. OUTPUT
HORIZ. SYNC. DISC.
HORIZ. OSC.
HORIZ. OUTPUT
HV RECT.
DAMPER
DEFLECTION YOKE
FOCUS COIL
AF AMP CIRCUIT USED IN LATER PRODUCTION
DEFLECTION & FOCUS CIRCUIT USED IN 19 INCH SETS

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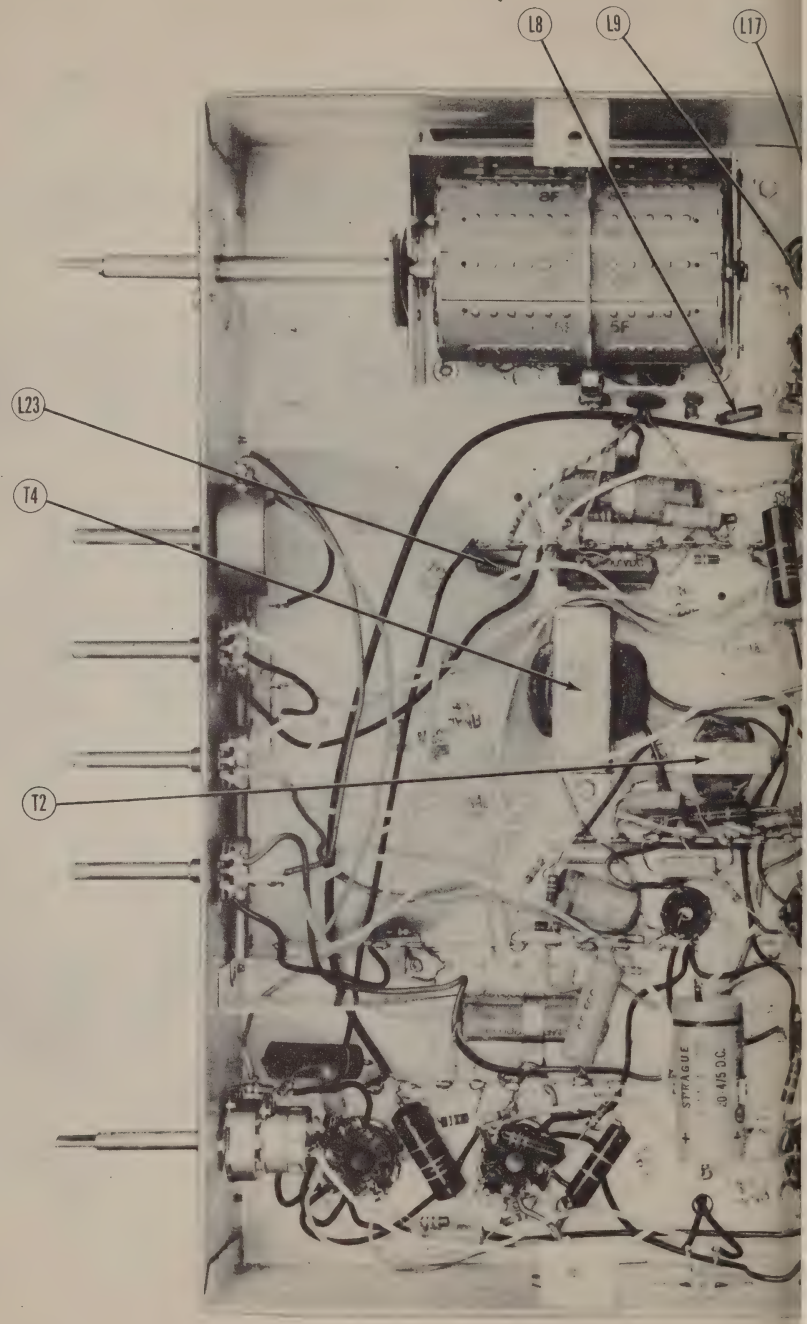
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUC

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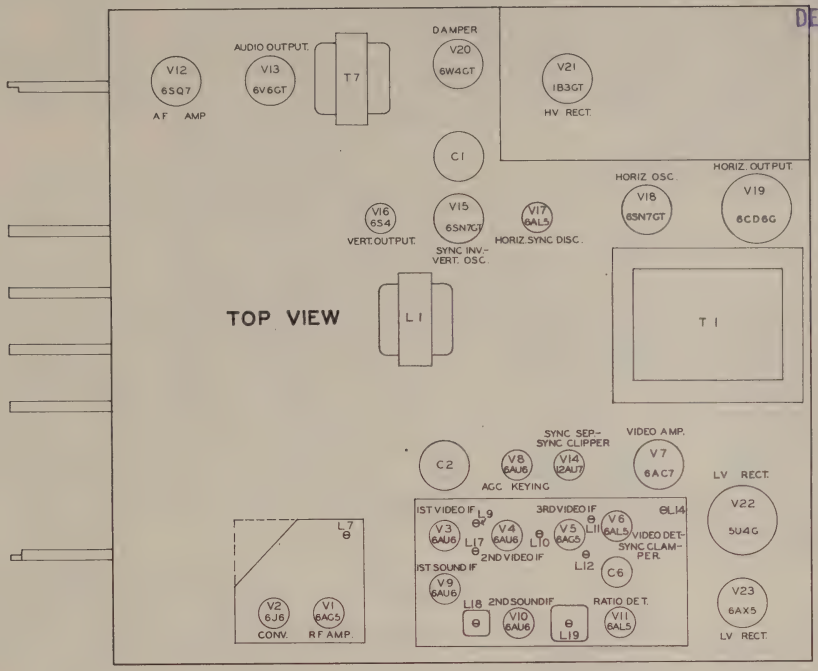
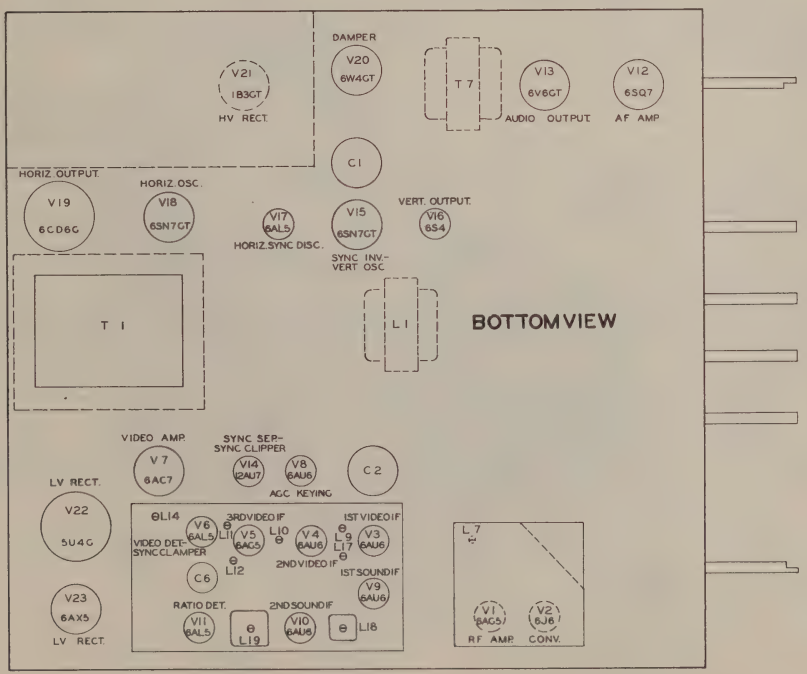




TUBE PLACEMENT CHART

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.5VDC	0V.	6.3VAC	0V.	120VDC	120VDC	0V.		
V 2	6J6	160VDC	160VDC	6.3VAC	0V.	-2.5VDC	§-6.1VDC	0V.		
V 3	6AU6	-.4VDC	0V.	6.3VAC	0V.	145VDC	145VDC	.5VDC		
V 4	6AU6	-.3VDC	0V.	6.3VAC	0V.	145VDC	145VDC	.5VDC		
V 5	6AG5	0V.	1.3VDC	6.3VAC	0V.	145VDC	145VDC	1.3VDC		
V 6	6AL5	0V.	-18VDC	6.3VAC	0V.	0V.	0V.	-.5VDC		
V 7	6AC7	0V.	0V.	6V.	-.5VDC	0V.	43VDC	6.3VAC	145VDC	
V 8	6AU6	†-90VDC	†-75VDC	6.3VAC	0V.	†-230VDC	†140VDC	†-75VDC		
V 9	6AU6	0V.	0V.	6.3VAC	0V.	165VDC	165VDC	1.2VDC		
V 10	6AU6	-.4VDC	0V.	6.3VAC	0V.	240VDC	50VDC	0V.		
V 11	6AL5	.4VDC	.4VDC	4.1VAC	0V.	.9VDC	0V.	0V.		
V 12	6SQ7	0V.	-.5VDC	0V.	0V.	0V.	90VDC	6.3VDC	0V.	
V 13	6V6GT	0V.	6.3VAC	235VDC	250VDC	0V.	220VDC	0V.	12VDC	
V 14	12AU7	370VDC	140VDC	160VDC	6.3VAC	6.3VAC	70VDC	-1.1VDC	0V.	0V.
V 15	6SN7GT	-15VDC	320VDC 100VDC	0V.	-18VDC	380VDC	1.2VDC	6.3VAC	0V.	
V 16	6S4	Inf.	20VDC	0V.	6.3VAC	0V.	0V:	0V.	0V.	*
V 17	6AL5	5.7VDC	-6VDC	0V.	6.3VAC	0V.	0V.	0V.		
V 18	6SN7GT	.2VDC	320VDC	14VDC	-3.5VDC	130VDC	14VDC	6.3VAC	0V.	
V 19	6CD6G	14VDC	6.3VAC	14VDC	5VAC	-3.5VDC	150VDC	0V.	135VDC	TOP CAP *
V 20	6W4GT	400VDC	0V.	440VDC	440VDC	350VDC	0V.	¶	¶	
V 21	1B3GT	* DO NOT MEASURE.								
V 22	5U4G	0V.	370VDC	6.3VAC	330VAC	0V.	330VAC	6.3VAC	370VDC	
V 23	6AX5	0V.	¶	230VAC	0V.	230VAC	0V.	¶	235VDC	
V 24	16GP4	6.3VAC	†-157VDC	PIN 10 †200VDC	PIN 11 †-90VDC	PIN 12 0V.				

§ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 8 OF V23.
* DO NOT MEASURE.
¶ 6.3VAC MEASURED ACROSS FILAMENTS.

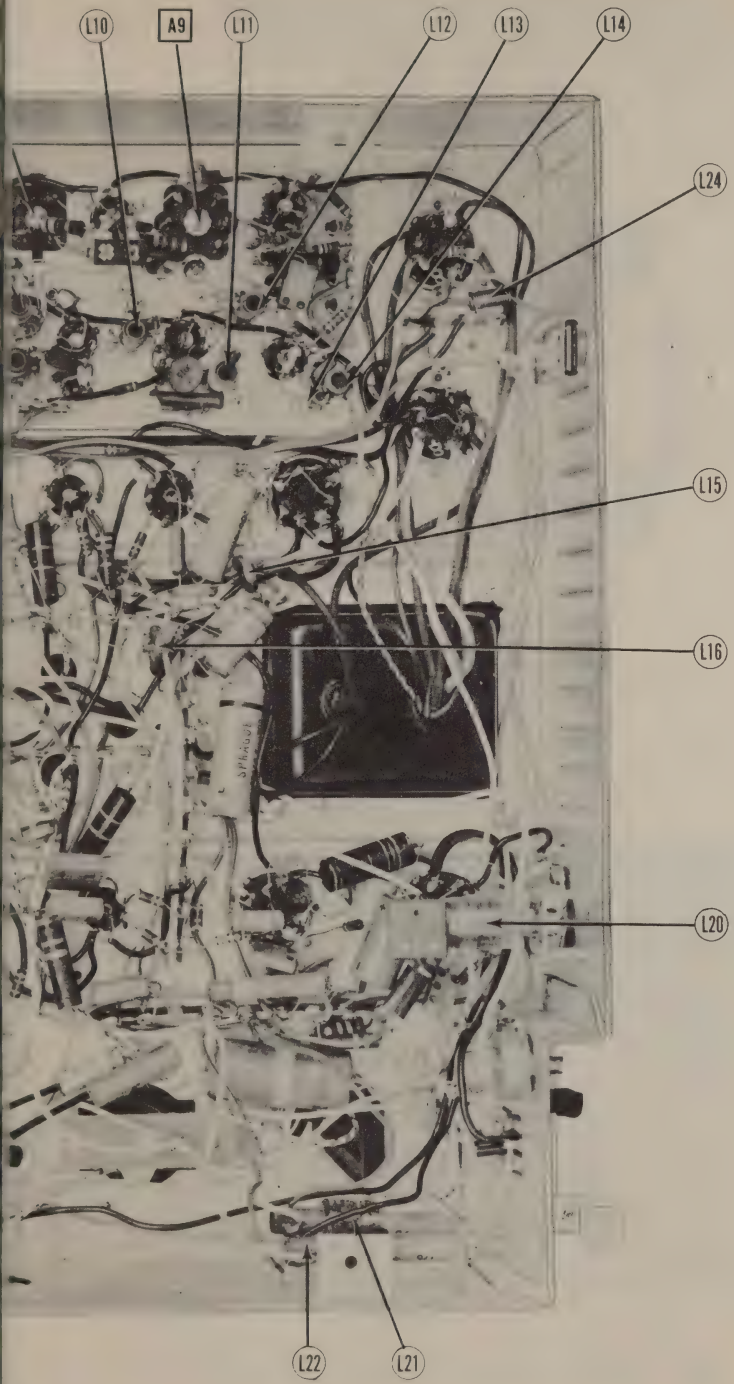
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	175KΩ	0Ω	.1Ω	0Ω	†3.2KΩ	†3.2KΩ	0Ω		
V 2	6J6	†5.7KΩ	†16KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	105KΩ	0Ω	.1Ω	0Ω	†2KΩ	†2KΩ	39Ω		
V 4	6AU6	100KΩ	0Ω	.1Ω	0Ω	†2KΩ	†2KΩ	39Ω		
V 5	6AG5	.5Ω	100Ω	.1Ω	0Ω	†2KΩ	†2KΩ	100Ω		
V 6	6AL5	.5Ω	4.7 Meg.	.1Ω	0Ω	0Ω	0Ω	3.3KΩ		
V 7	6AC7	0Ω	0Ω	0Ω	3.3KΩ	0Ω	15KΩ	.1Ω	†5.3KΩ	
V 8	6AU6	†9KΩ	†1000Ω	.1Ω	0Ω	220KΩ	#10KΩ	†1000Ω		
V 9	6AU6	.1Ω	0Ω	.1Ω	0Ω	#6.4KΩ	#6.4KΩ	82Ω		
V 10	6AU6	39KΩ	0Ω	.1Ω	0Ω	#2.7KΩ	15KΩ	0Ω		
V 11	6AL5	Inf.	Inf.	2.5Ω	0Ω	30KΩ	0Ω	820Ω		
V 12	6SQ7	0Ω	4.7 Meg.	0Ω	Inf.	Inf.	#320KΩ	.1Ω	0Ω	
V 13	6V6GT	Inf.	.1Ω	#2KΩ	#1.7KΩ	470KΩ	65KΩ	0Ω	270Ω	
V 14	12AU7	#18KΩ	†105KΩ	300KΩ	.1Ω	.1Ω	†23KΩ	2.2 Meg.	0Ω	0Ω
V 15	6SN7GT	2.3 Meg.	♦2.7 Meg ♦270KΩ	0Ω	4.7 Meg.	#3.5KΩ	3.3KΩ	.1Ω	0Ω	
V 16	6S4	Inf.	7000Ω 1000Ω	1 Meg.	.1Ω	0Ω	1 Meg.	Inf.	Inf.	♦3.5KΩ
V 17	6AL5	4.8 Meg.	4.8 Meg.	0Ω	.1Ω	15KΩ	0Ω	15KΩ		
V 18	6SN7GT	5.2 Meg.	♦18KΩ	1.5KΩ	107KΩ	♦230KΩ	1.5KΩ	.1Ω	0Ω	
V 19	6CD6G	150Ω	.1Ω	150Ω	8.2KΩ	470KΩ	♦250KΩ	0Ω	#20KΩ	TOP CAP ♦60Ω
V 20	6W4GT	♦2.2KΩ	Inf.	♦0Ω	♦11Ω	#70Ω	Inf.	315KΩ	315KΩ	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ♦500Ω
V 22	5U4G	Inf.	18KΩ	.1Ω	19Ω	Inf.	19Ω	.1Ω	18KΩ	
V 23	6AX5	Inf.	315KΩ	12Ω	Inf.	12Ω	Inf.	315KΩ	30KΩ	
V 24	16GP4	.1Ω	55KΩ	PIN 10 ♦2.2KΩ	PIN 11 †225KΩ	PIN 12 0Ω				

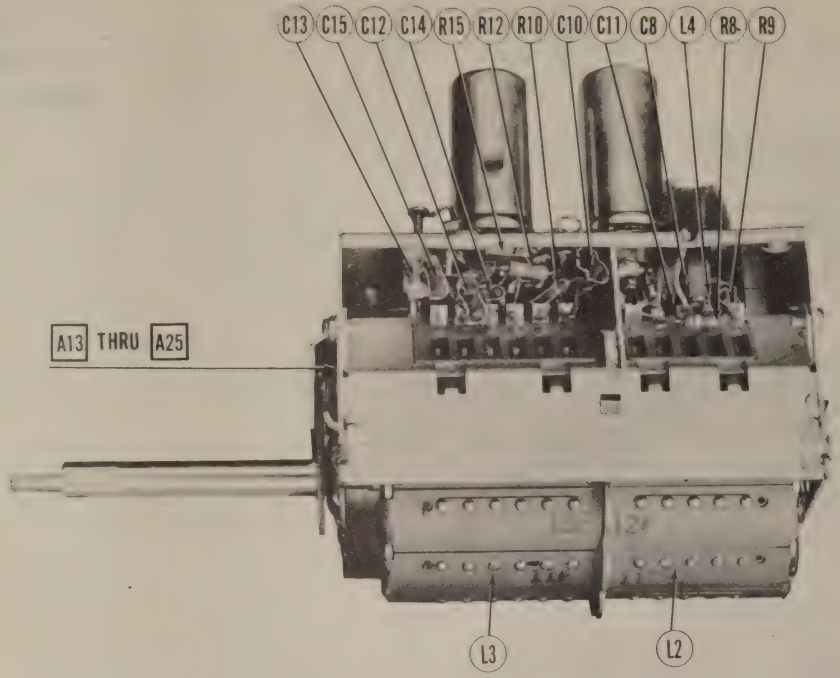
† MEASURED FROM PIN 8 OF V23.
# MEASURED FROM PIN 2 OF V22.
♦ MEASURED FROM PIN 3 OF V20.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

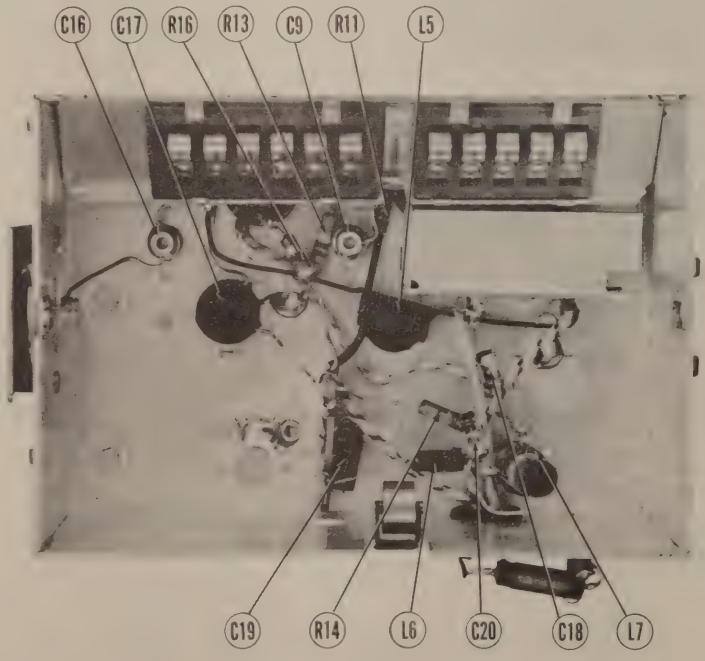
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



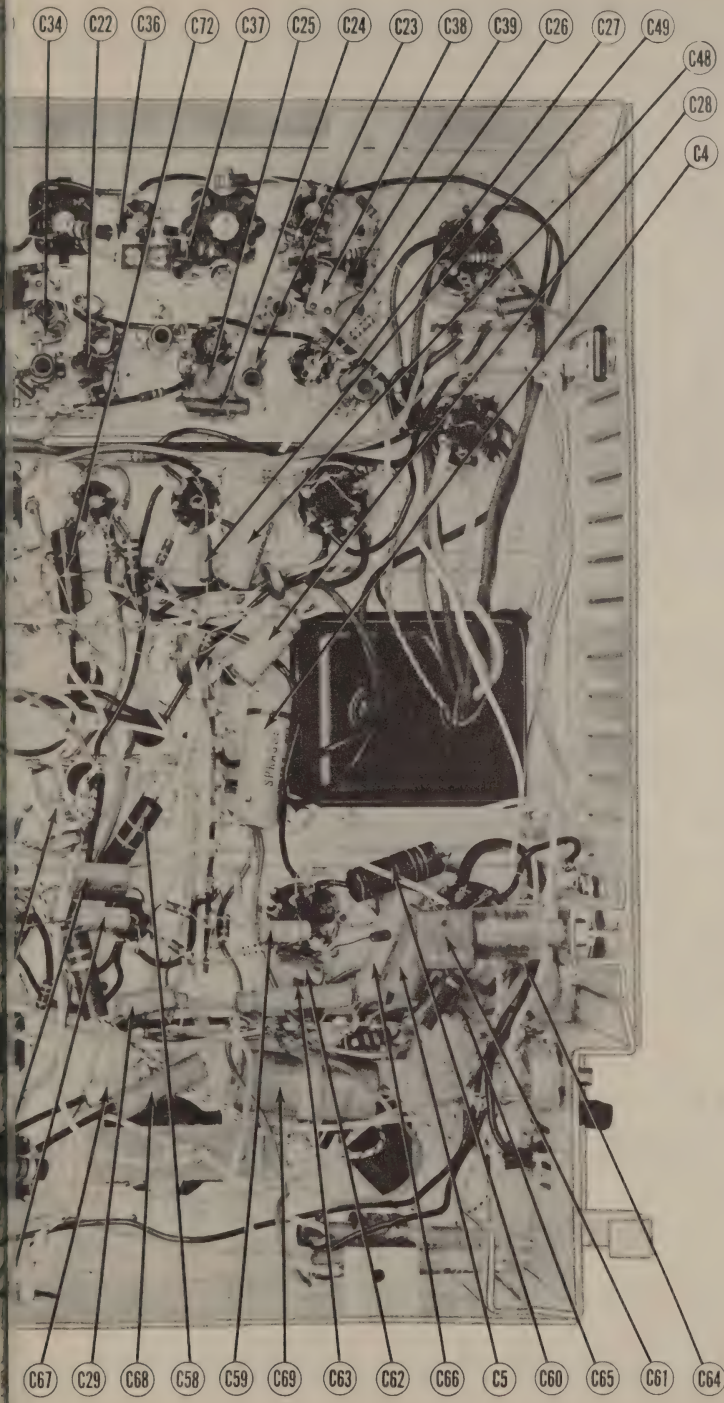
OR AND ALIGNMENT IDENTIFICATION



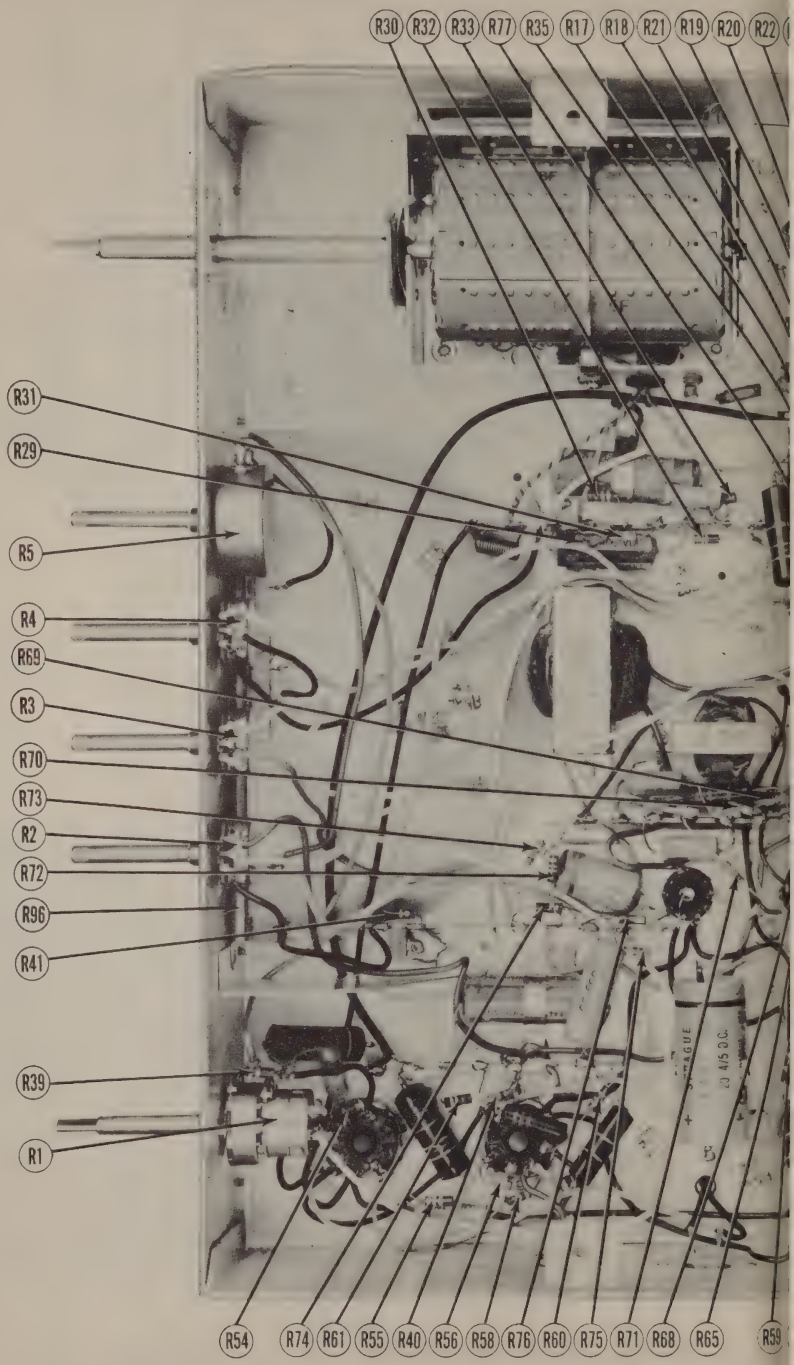
RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



PACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-R

PROPERTY OF
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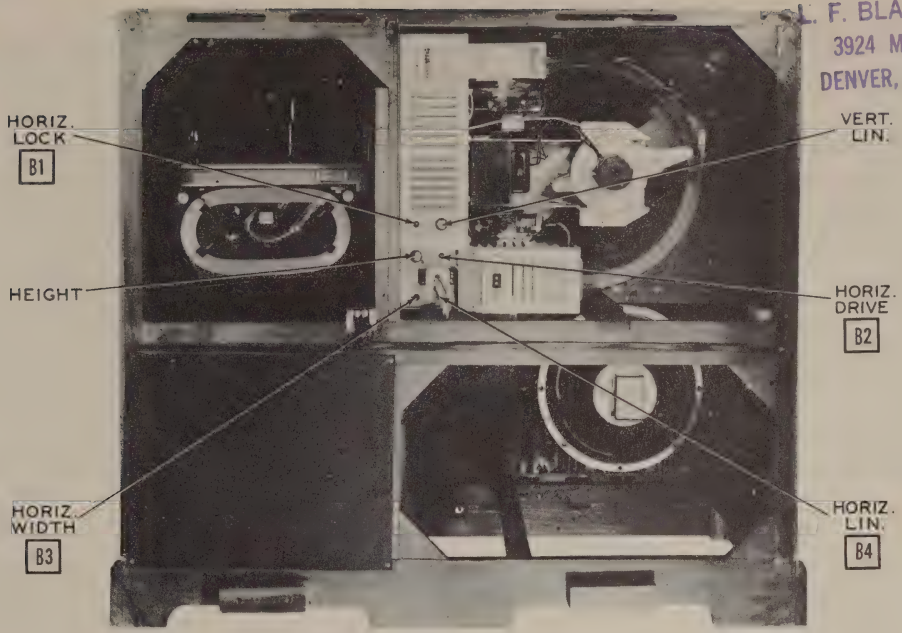
3924 MEADE ST.
DENVER, COLORADO



CABINET- REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) for best compromise between brightness and linearity. If vertical white bars appear in the picture, adjust B2 until the bars just disappear.

Adjust the width slug (B3) until the picture is of proper size horizontally.

Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right.

Slight readjustment of B2 may be necessary to obtain optimum linearity.

DISASSEMBLY INSTRUCTIONS

TV CHASSIS

1. Remove four push-on type control knobs from front of set.
2. Remove six phillips and 1 hex head screw holding rear cover. Remove cover.
3. Loosen 1/4" hex head screw holding radio plug brace. Remove plug.
4. Disconnect built-in antenna leads at TV chassis terminal.
5. Remove speaker plug from lower side of chassis.
6. Remove phono and pilot light plugs from lower side of chassis.
7. Remove four 7/16" hex head bolts holding chassis to vertical mounting board. Remove chassis.
8. Remove four 11/32" hex nuts holding speaker. Remove speaker.

RADIO CHASSIS

1. Loosen power cable clamps on cabinet and radio-phono unit. Free cables.
2. Remove two screws holding loop antenna and unsolder both antenna leads. Remove loop.
3. Disconnect FM antenna leads at rear cabinet terminal. Remove two phillips head screws holding terminal.
4. Remove seven phillips head screws at sides and on underside of front radio housing.
5. Pull the chassis forward until you can reach in and disconnect phono pick-up and power plugs. Remove chassis.
6. Remove four push-on type control knobs from front of radio chassis.
7. Remove five phillips head screws on bottom of chassis holding front dial cover. Remove cover.

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AU6	6AU6	7BK	
V4	2nd Video IF	6AU6	6AU6	7BK	
V5	3rd Video IF	6AG5	6AG5	7BD	
V6	Video Det. -Sync. Clamper	6AL5	6AL5	6BT	
V7	Video Amp.	6AC7	6AC7	8N	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	1st Sound IF	6AU6	6AU6	7BK	
V10	2nd Sound IF	6AU6	6AU6	7BK	
V11	Ratio Det.	6AL5	6AL5	6BT	
V12A	AF Amp.	6SQ7	6SQ7	8Q	
B	AF Amp.	6AU6	6AU6	7BK	Used in late 24D1, 24E1, 24F1, 24G1, and all 24H1 chassis productions.
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Sync. Sep. -Sync. Clipper	12AU7	12AU7	9A	
V15	Vert. Osc. -Sync. Inv.	6SN7GT	6SN7GT	8BD	
V16	Vert. Output	6S4	6S4	9AC	
V17	Hor. Sync. Disc.	6AL5	6AL5	6BT	
V18	Hor. Osc.	6SN7GT	6SN7GT	8BD	
V19	Hor. Output	6CD6G	6CD6G	5BT	
V20	Damper	6W4GT	6W4GT	4CG	
V21	HV Rect.	1B3GT	1B3GT	3C	
V22	LV Rect.	5U4G	5U4G	5T	
V23	LV Rect.	6AX5	6AX5	6S	
V24A	Picture Tube	16GP4	16GP4	12D	
B	Picture Tube	19AP4	19AP4	12D	Used in chassis 24F1, 24G1 only.
C	Picture Tube	16TP4 or 16RP4	16TP4 or 16RP4	12D	Used in chassis 24H1 only.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	67C15-13	AFH862J4A		UP1DJ1194		TVL-415	▲ Filter
B	40	450							■ Filter
C	10	450							▲ Decoupling
D	20	25							Output Cath. Byp.
C2A	100	250	67C15-14	AFH2082F20B		UP1DJ1171		TVL-414	▲ Filter
B	40	250							■ Filter
C	10	250							▲ Decoupling
D	100	50							Vert. Output Cath. Byp.
C3	20	475	67A21-1	PRS500/15		BR2050A		TVA-121	Decoupling
C4	4	450	67A19-2	PRS450/4		BR445		TVA-104	Decoupling
C5	4	25	67A4-3	PRS150/4		BR550		TVA-50	Hor. Output Cath. Byp.
C6	4	50	67B16-1	PRS150/4		BR550		TVA-13	Stabilizing Cap.
C7	5		98A45-22	S15DNPO	D2-4, 7		NPOK-5		Fixed Trimmer
C8	.5-3		98A45-87		829-3				Variable Trimmer
C9	.5-3		98A45-23		829-3				Variable Trimmer
C10	120		98A45-25	GP120K	D6-121		GP1K-120		RF Decoupling
C11	1000		98A45-24	GP1000M	D6-102		GP2L-001		RF Filament Byp.
C12	100		98A45-26	SI100KN750	DN-100		N750L-100		RF Coupling
C13	.5-3		98A45-23		829-3				Variable Trimmer
C14	20		98A45-27	SI20JNPO	D2-20		NPOK-20		Osc. Grid Cap.
C15	10		98A45-79	SI10DN750	DN-10		N750K-10		Fixed Trimmer
C16	.5-3		98A45-23		829-3				Variable Trimmer
C17A	1000		98A45-24	GP1000M	D6-102		882-2 x 0015	29C7	Osc. Fil. Byp.
B	1000			GP1000M	D6-102				RF Bypass
C18	10		98A45-64	CN10DNPO	D2-10		NPOK-10		Fixed Trimmer
C19	72	300	98A45-65						Fixed Trimmer
C20	300		98A45-66	GP300M	D6-301		GP2K-300		IF Coupling
C21A	1500		65A17-2	GP1500M	D6-152	1W5D15	882-2 x 0015	29C6	AGC Filter
B	1500			GP1500M	D6-152	1W5D15			1st V. IF Decoup.
C22A	1500		65A17-2	GP1500M	D6-152	1W5D15	882-2 x 0015	29C6	AGC Filter
B	1500			GP1500M	D6-152	1W5D15			2nd V. IF Decoup.
C23	120	300	65B1-10		D2-120				Fixed Trimmer
C24	250		65B6-21	GP250K	D6-251	5W5T25	GP2K-250	1FM-325	3rd V. IF Cath. Byp.
C25	1500		65A10-4	GP1500M	D6-152	1W5D15	811-0015	1FM-215	3rd V. IF Decoupling
C26	10		65B6-69	GP10K	D6-100	5W5Q1	GP1K-10	MS-41	V. Diode Filter
C27	120	300	65B1-10		D2-120				Fixed Trimmer
C28	.2	200	64B5-29	P488-22		GT4P2		TC-2	Video Coupling
C29	1000	500	65B21-102	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Hor. Sweep Coup.
C30	.1	400	64B8-26	P488-1		PTE4P1		TM-1	AGC Filter
C31	.005	600	64B5-12	P688-005	D6-502	PTE6D5	811-005	TM-25	AGC Filter
C32	.5	200	64B6-27	P288-5		GT2P5		TC-5	AGC Filter
C33	.047	600	64B8-9	P688-047		PTE6S5		TM-15	Pic. Tube Grid Byp.
C34	120	300	65B1-10		D2-120				Fixed Trimmer
C35A	1500		65A17-2	GP1500M	D6-152	1W5D15	882-2 x 0015	29C6	1st S. IF Grid Byp.
B	1500			GP1500M	D6-152	1W5D15			1st S. IF Decoupling
C36	100		65B6-19	GP100M	D6-101	5W5T1	GP1K-100	1FM-31	2nd S. IF Grid Filter
C37A	1500		65A17-2	GP1500M	D6-152	1W5D15	882-2 x 0015	29C6	2nd S. IF Screen Byp.
B	1500			GP1500M	D6-152	1W5D15			2nd S. IF Decoup.
C38	330	500	65B21-331	1468-00035	D6-331	5W5T3	GP2K-331	1FM-335	Diode Load Cap.
C39	.0022	600	64B8-17	P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	De-emphasis
C40	.047	600	64B8-9	P688-047		PTE6S5		TM-15	Audio Coupling
C41	.01	600	64B8-13	P688-01	D6-103	PTE6S1	811-01	TM-11	Audio Coupling
C42	.047	600	64B8-9	P688-047		PTE6S5		TM-15	AF Amp. Plate Dec.
C43	.1	600	64B8-7	P688-1		PTE6P1		TM-1	AF Amp. Screen Byp. †
C44	.01	600	64B8-13	P688-01	D6-103	PTE6S1	811-01	TM-11	Audio Coupling *
C45	.01	600	64B8-13	P688-01	D6-103	PTE6S1	811-01	TM-11	Tone Comp.
C46	.0022	1000	64A2-11	P1088-0022		PTE16D2		MB-22	Output Plate Byp.
C47	.5	200	64B6-27	P288-5		GT2P5		TC-5	Sync. Sep. & Clipper Cath. Byp.
C48	.05	600	64B5-7	P688-05		PTE6S5		TM-15	Sync. Coupling
C49	120	500	65B21-121	1468-00015	D6-121	5W5T15	GP2K-120	1FM-215	Sync. Coupling
C50	.0022	600	64B8-17	P688-0022	D6-222	PTE6D2	GP2M-0022	TM-22	Integrator Net.
C51	.005	600	64B5-12	P688-005	D6-502	PTE6D5	811-005	TM-25	Integrator Net.
C52	4700	500	65B21-472	1467-005	D6-472	1D5D5	GP2M-0047	1FM-25	Integrator Net.
C53	4700	500	65B21-472	1467-005	D6-472	1D5D5	GP2M-0047	1FM-25	Vert. Osc. Grid Cap.
C54	.1	600	64B8-7	P688-1		PTE6P1		TM-1	Vert. Sweep Coup.
C55	.05	600	64B5-7	P688-05		PTE6S5		TM-15	Vert. Discharge
C56	1000	500	65B21-102	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Hor. Sync. Coupling

CAPACITO

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMEN: ADMIRAL PART No.	REPLACEMEN: AEROVOX PART No.	REPLACEMEN: CENTRALAB PART No.
C57	1000	500	65B21-102	1467-001	D6-102
C58	.01	600	64B8-13	P688-01	D6-103
C59	.005	600	64B5-12	P688-005	D6-502
C60	.047	600	64B8-9	P688-047	
C61	3900	500		1464-004	
C62	330	500	65B21-331	1469-00035	D6-331
C63	100	500	65B22-101	1468-0001	D6-101
C64	330	500	65B21-331	1469-00035	D6-331
C65	270	500	65B21-271	1468-00025	D6-271
C66	.05	600	64B5-7	P688-05	
C67	.05	200	65A2-8	P288-05	
C68	.02	400	64A2-9	P488-02	
C69	.25	400	64B6-3	P488-25	
C70	.1	400	64A2-10	P488-1	
C71	500	20000	65B18-4 §		TV3-502
C72	.01	600	64B8-13	P688-01	D6-103

† Used in models using 6AU6 audio amplifier.
* Models using 6AU6 audio amplifier use .02MFD in this applic
† Sets with rectangular picture tube use .22MFD in this applica
§ Late sets use condenser with threaded stud at both ends. MF

CONTI

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROST PART No.
R1A	25KΩ	½	75B11-14	Concentrikit	
B	250KΩ	½		B11-120 *	
C	Shaft End			B13-130 *	
D	Switch			E-202 *	
R2A	100KΩ	½	75A13-12	76-2 *	M-49-S
B	Shaft		Not Req.	Q11-128	Not Req.
R3A	1 Meg.	½	75A13-14	Not Req.	M-61-S
B	Shaft		Not Req.	Q11-137	Not Req.
R4A	25KΩ	½	75A13-13	Not Req.	M-40-S
B	Shaft		Not Req.	Q11-120	Not Req.
R5	6000Ω	4	75A13-15	Not Req.	
R6A	6000Ω	½	75A13-1	Q11-115	M-23-S
B	Shaft		Not Req.	Not Req.	Not Req.
R7A	2.5 Meg.	½	75A13-3	Q11-239	M-84-S
B	Shaft		Not Req.	Not Req.	Not Req.

* Additional parts to be used with "Concentrikit".

RESI

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: IRC PART No.
R8	3900Ω	½	98A45-16	BTS-3900
R9	47KΩ 20%	½	98A45-17	BTS-47K
R10	10KΩ	½	98A45-18	BTS-10K
R11	2200Ω 20%	½	98A45-19	BTS-2200
R12	4700Ω	½	98A45-20	BTS-4700
R13	220KΩ 20%	½	98A45-21	BTS-220K
R14	15KΩ 20%	½	98A45-67	BTS-15K
R15	10KΩ	½	98A45-18	BTS-10K
R16	4700Ω	½	98A45-20	BTS-4700
R17	5600Ω	½	60B8-562	
R18	39Ω	½	60B8-390	
R19	1000Ω	½	60B8-102	BTS-1000
R20	12KΩ	½	60B8-123	
R21	1000Ω	½	60B8-102	BTS-1000
R22	1000Ω	½	60B8-102	BTS-1000
R23	39Ω	½	60B8-390	
R24	1000Ω	½	60B8-102	BTS-1000
R25	33KΩ	½	60B8-333	
R26	100Ω	½	60B8-101	
R27	1000Ω	½	60B8-102	BTS-1000
R28	3300Ω	½	60B8-332	BTS-3300
R29	100KΩ	½	60B8-104	BTS-100K
R30	27KΩ	½	60B8-273	BTS-27K
R31	47KΩ	½	60B8-473	BTS-47K
R32	47KΩ	½	60B8-473	BTS-47K
R33	22KΩ	½	60B8-223	BTS-22K
R34	43000Ω 5%	1	60B14-432	
R35	10KΩ	½	60B8-103	BTS-10K
R36	3300Ω	½	60B8-332	BTS-3300
R37	100KΩ	½	60B8-104	BTS-100K
R38	220KΩ	½	60B8-224	BTS-220K
R39	15KΩ	½	60B8-153	BTS-15K
R40	10KΩ	½	60B8-103	BTS-10K
R41	100KΩ	½	60B8-104	BTS-100K
R42	82Ω	½	60B8-820	
R43	4700Ω	1	60B14-472	BTA-4700
R44	39KΩ	½	60B8-393	
R45	47KΩ	1	60B14-473	
R46	1000Ω	½	60B8-102	BTS-1000
R47	15KΩ	½	60B8-153	BTS-15K
R48	150Ω	½	B608-151	
R49	4.7Ω	½	60B28-11	BW-½-4.7
R50	15KΩ	½	60B8-153	BTS-15K
R51	15KΩ	½	60B8-153	BTS-15K
R52	820Ω	½	60B8-821	BTS-820
R53	27KΩ	½	60B8-273	BTS-27K
R54	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.
R55	270KΩ	½	60B8-274	BTS-270K
R56	47KΩ	½	60B8-473	BTS-47K
R57	1 Meg.	½	60B8-105	BTS-1 Meg.
R58	470KΩ	½	60B8-474	BTS-470K
R59	270Ω	1	60B14-271	BW-1-270
R60	18KΩ	½	60B8-183	BTS-18K
R61	270KΩ	½	60B8-274	BTS-270K
R62	18KΩ	½	60B8-183	BTS-18K
R63	2.2 Meg.	½	60B8-225	BTS-2.2 Meg
R64	22KΩ	½	60B8-223	BTS-22K
R65	4.7 Meg.	½	60B8-475	BTS-4.7 Meg
R66	3300Ω	½	60B8-332	BTS-3300
R67	3300Ω	½	60B8-332	BTS-3300

DESCRIPTIONS

(CONT.)

A NELL-WILLIER T No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
D1	GP2L-001	1FM-21	Hor. Sync. Coupling
681	811-01	TM-11	Integrator Net.
6D5	811-005	TM-25	AFC Filter
685		TM-15	AFC Filter
6D4		MS-24	Fixed Trimmer
T3	GP2K-330	MS-33	Hor. MV Feedback
T1	GP1K-100	1FM-31	Hor. MC Feedback
T3	GP2K-330	MS-33	Hor. Discharge
T25	GP2K-270	1FM-325	Hor. Sweep Coupling
685		TM-15	Hor. Output Screen Byp.
4S5		TM-15	Damper Filter
4S2		TM-12	Damper Filter
P25		TC-2	Damper Filter
4P1		TM-1	Hor. Sweep Coup. †
681	811-01	TM-11	HV Filter AGC Keying Screen Byp.

MFGR'S Part No. 64B8-11.
MFGR'S Part No. 64B9-24.
Part No. 65B18-5.

S

ENTRALAB PART NO.	INSTALLATION NOTES
	Contrast control-front
	Volume control-rear
	Attach per instructions in "Concentrikit".
BB-616-S	Attach per instructions in "Concentrikit".
N-40	Brightness control
K-4	Attach to R2A per instructions
N-69	Vert. hold control
K-4	Attach to R3A per instructions
N-26	Horiz. hold control
K-4	Attach to R4A per instructions
	Focus control-Wire Wound
N-13	Vert. linearity control
K-1	Attach to R6A per instructions
N-83	Height control
K-1	Attach to R7A per instructions

RS

IDENTIFICATION CODES

RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.

- Coil Shunt
- Network
- Plate Coil Shunt
- Decoupling
- . Grid
- . Grid
- . Plate Decoupling
- Grid
- Plate
- ideo IF Grid
- ideo IF Cathode
- ideo IF Decoupling
- Video IF Transformer Shunt
- Network
- Network
- Video IF Cathode
- Video IF Decoupling
- Video IF Transformer Shunt
- Video IF Cathode
- Video IF Decoupling
- Det. Diode Load
- ge Divider
- Network
- Network
- Network
- Network
- Amp. Plate
- Keying Screen
- Keying Grid
- ge Divider
- ge Divider
- ge Divider
- ge Divider
- ge Divider
- und IF Cathode
- und IF Decoupling
- ound IF Grid
- ound IF Screen
- ound IF Decoupling
- ge Divider
- cing
- Det. Filament - Wire Wound
- Det. Diode Load
- Det. Diode Load
- cing
- phasis
- mp. Grid
- mp. Plate-See Note 1
- mp. Plate Decoupling
- mp. Screen-See Note 2
- Grid
- Cathode
- Compensation
- e Divider
- Sep. Plate
- Clipper Grid
- Clipper Plate
- Phase Inv. Grid
- Phase Inv. Plate
- Phase Inv. Cathode

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ADMIRAL PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R68	22KΩ	½	60B8-223	BTS-22K	Integrator Network
R69	8200Ω	½	60B8-822	BTS-8200	Integrator Network
R70	8200Ω	½	60B8-822	BTS-8200	Integrator Network
R71	1.2 Meg.	½	60B8-125	BTS-1.2 Meg.	Vert. Osc. Grid
R72	270KΩ	½	60B8-274	BTS-270K	Vert. Osc. Plate-See Note 5
R73	6.8 Meg.	½	60B8-685	BTS-6.8 Meg.	Voltage Divider
R74	100KΩ	½	60B8-104	BTS-100K	Voltage Divider
R75	8200Ω	½	60B8-822	BTS-8200	Vert. Peaking
R76	1 Meg.	½	60B8-105	BTS-1 Meg.	Vert. Output Grid
R77	1000Ω	1	60B14-102	BTA-1000	Vert. Output Cathode
R78	2200Ω	2	60B20-222	BT-2-2200	Decoupling
R79	100KΩ 5%	½	60B7-104	BTS-100K-5%	Horiz. Sync. Disc. Load
R80	100KΩ 5%	½	60B7-104	BTS-100K-5%	Horiz. Sync. Disc. Load
R81	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Horiz. Sync. Disc. Load
R82	470KΩ	½	60B8-474	BTS-470K	Horiz. AFC Filter Network
R83	15KΩ	2	60B8-153	BT-2-15K	Feedback Network
R84	1500Ω	½	60B8-152	BTS-1500	Horiz. Osc. Cathode-See Note 4
R85	5600Ω	½	60B8-562	BTS-5600	Horiz. Osc. Plate
R86	82KΩ	½	60B8-823	BTS-82K	Horiz. Discharge Grid
R87	220KΩ	½	60B8-224	BTS-220K	Horiz. Discharge Plate
R88	12KΩ	2	60B20-123	BT-2-12K	Decoupling
R89	8200Ω	½	60B8-822	BTS-8200	Horiz. Peaking
R90	68Ω	½	60B8-680		Parasitic Supp.
R91	470KΩ	½	60B8-474	BTS-470K	Horiz. Output Grid-See Note 5
R92	150Ω	2	60B20-151	BW-2-150	Horiz. Output Cathode
R93	56KΩ	1	60B14-563	BTA-56K	Horiz. Output Screen
R94	27KΩ	2	60B20-273	BT-2-27K	Horiz. Output Screen
R95	470KΩ	1	60B14-474		HV Filter
R96A	20KΩ	5	61B13-1		Bleeder Network-Wire Wound
B	1000Ω	2			Focus Control Shunt-Wire Wound
C	4500Ω	5			Focus Coil Shunt-Wire Wound
R97	22KΩ	2	60B20-223	BT-2-22K	Bleeder Network-See Note 3
R98	1000Ω	5	61A3-13	AB-1000	Filter-Wire Wound
R99	270KΩ	½	60B8-274	BTS-270K	Equalizing

Note 1. Late model productions use 150KΩ resistor in this application.
Note 2. Used only in late model productions.
Note 3. Not used in all models.
Note 4. Some models use 1600Ω resistor in this application.
Note 5. Models using rectangular picture tube use 1 meg resistor in this application.

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TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1A	117VAC @ 2.1A	640VCT .180ADC Tap @ 420VCT .070ADC	5VAC @ 3A	6.3VAC @ 2.3A SEC. 4 6.3VAC @ 9.6A	80B24-1 ①		P-3087 ⑪	
B					80C25-1 ②			

⑪ Add series resistor to reduce plate voltage of high voltage secondary tap.
① Used in sets which use 6SQ7 audio amplifier.
② Used in sets which use 6AU6 audio amplifier.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	210Ω	1100Ω	79A18-2	A-8111 ③	A-3000 ③	TBO-3 ③	Vert. Block Osc. Trans.
T3	285Ω	5Ω	79C30-1				Hor. Output Trans.
	Tap @ 44Ω	Tap @ 2.6Ω					
		SEC. 2 2Ω					
		SEC. 3 0Ω					
T4	1400Ω Tap @ 13.5Ω		79B29		A-3037		Vert. Output Trans.
T5A1	13Ω		A3178 ④		MD-70F		Hor. Deflection Coil
B1	46Ω						Vert. Deflection Coil
A2			A3197 ⑤				Deflection Yoke
T6	1950Ω		69C117-1				Focus Coil

③ Drill one new mounting hole.
④ Used in sets with 16 inch picture tube.
⑤ Used in sets with 19 inch picture tube.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7A B	4.6KΩ	4.2Ω	270Ω	.4Ω	79A31-1 ① 79A31-4 ②	A-3877 ③	A-3019 ③	RO-9	① Used in sets which use 6SQ7 audio amplifier. ② Used in sets which use 6AU6 audio amplifier ③ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1A	PM	4.2Ω		ST-102 10		⑦ Used in chassis 24E1, 24G1
B	PM		78B55-1 ⑦	MOD. P12-S	12A4A	⑧ Used in chassis 24D1, 24F1
C	PM		78B55-2 ⑧			⑨ Used in chassis 24H1
	CONE DIA.	V. C. DIA.	78B47-1 ⑨			⑩ Replace output transformer to match 6-8Ω voice coil.
SP2A	11 1/2"	1"				
B	11 1/2"					
C	9 1/2"					

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~	ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1A B C	.180ADC	54Ω	1.3 Henries	74B18-1 ① 74B18-2 ② 74B18- ⑩	C-2325 ③	C-2994 ③	TR-4200③	① Used in sets which use 6SQ7 audio amp. ② Used in sets which use 6AU6 audio amp. ③ Drill one new mounting hole. ⑩ Used in early production.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	
L2A	Ant. Coil	0Ω	0Ω	98A62-2		Channel 2
B	Ant. Coil	0Ω	0Ω	98A62-3		Channel 3
C	Ant. Coil	0Ω	0Ω	98A62-4		Channel 4
D	Ant. Coil	0Ω	0Ω	98A62-5		Channel 5
E	Ant. Coil	0Ω	0Ω	98A62-6		Channel 6
F	Ant. Coil	0Ω	0Ω	98A62-7		Channel 7
G	Ant. Coil	0Ω	0Ω	98A62-8		Channel 8
H	Ant. Coil	0Ω	0Ω	98A62-9		Channel 9
I	Ant. Coil	0Ω	0Ω	98A62-10		Channel 10
J	Ant. Coil	0Ω	0Ω	98A62-11		Channel 11
K	Ant. Coil	0Ω	0Ω	98A62-12		Channel 12
L	Ant. Coil	0Ω	0Ω	98A62-13		Channel 13
L3A	Mixer-Osc.	0Ω		98A63-2		Channel 2
B	Mixer-Osc.	0Ω		98A63-3		Channel 3
C	Mixer-Osc.	0Ω		98A63-4		Channel 4
D	Mixer-Osc.	0Ω		98A63-5		Channel 5
E	Mixer-Osc.	0Ω		98A63-6		Channel 6
F	Mixer-Osc.	0Ω		98A63-7		Channel 7
G	Mixer-Osc.	0Ω		98A63-8		Channel 8
H	Mixer-Osc.	0Ω		98A63-9		Channel 9
I	Mixer-Osc.	0Ω		98A63-10		Channel 10
J	Mixer-Osc.	0Ω		98A63-11		Channel 11
K	Mixer-Osc.	0Ω		98A63-12		Channel 12
L	Mixer-Osc.	0Ω		98A63-13		Channel 13
L4	Fil. Choke	0Ω		98A45-15		
L5	Fil. Choke	0Ω		98A45-14		
L6	RF Choke	.5Ω		98A45-72		
L7	1st Video IF	.5Ω		98A45-69		
L8	1st Video IF Coupling	1Ω		73A6-1		
L9	2nd Video IF -Sound Take Off	.5Ω	.5Ω	72C96-5		
L10	3rd Video IF	.5Ω	.5Ω	72C96-3		
L11	3rd Video IF Cathode Trap	.1Ω	.1Ω	72C96-2		
L12	4th Video IF	.6Ω	.6Ω	72C96-4		
L13	Peaking	8.5Ω		73A5-4	19-1920	90 microhenries wound on 33KΩ resistor
L14	Sound Trap	1.2Ω		73A4-1		7.3 microhenries
L15	Peaking	7Ω		73A5-5	19-1922	250 microhenries wound on 33KΩ resistor
L16	Peaking	7Ω		73A5-5	19-1922	250 microhenries wound on 33KΩ resistor
L17	1st Sound IF	0Ω		72C96-2		
L18	2nd Sound IF	.5Ω	.2Ω	72B86-2		
L19	Ratio Det. Trans.	.1Ω	.1Ω	72B87-1		
L20	Horiz. Freq.	50Ω		94A17		Includes R85 and C61
L21	Horiz. Lin.	11.4Ω		94A28		Tap at 7Ω
L22	Width	1.8Ω		94A29		
L23	Fil. Choke	0Ω				
L24	Fil. Choke	0Ω				

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	ADMIRAL PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	409A13-1	AC-AG-J	C-AG	W26B	A66U	

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ADMIRAL PART No.		
M2	Bayonet	6-8	.15	Brown	82A10-3		Type #47 Jewel pilot light
M3	Bayonet	6-8	.15	Brown	81A1-5		Type #47 Pilot light

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M4	RF Tuner	94C18-3	
M5	Fuse	84A1-18	4A 250V Type MTH
M6	Fuse	84A4-2	.25A 250V Type 8AG
M7A	Ion Trap	94A16-2	For 16 inch tube
B	Ion Trap	94A15-1	For 19 inch tube
M8	Switch	77A29	Phono compartment light
M9A	Antenna	A3132	Models 36X36, 36X37
B	Antenna	A3023	Models 39X16, 39X17, 29X15, 29X16, 29X17, 26X36, 26X37, 26X35
C	Antenna	A3029	Models 26X45, 26X46
M10	Trimmer	66A30-1	20-280MMF Horiz. Drive
	Knob	33C53-9	Channel selector
	Knob	33C53-10	Fine tuning
	Knob	33C53-11	Off-Volume
	Knob	33C53-12	Contrast
	Safety Glass	23D61	Round mounting holes 16 inch tube
	Safety Glass	23D61-1	Oblong mounting hole 16 inch tube
	Safety Glass	23D62	Round mounting holes 19 inch tube
	Safety Glass	23D62-1	Oblong mounting holes 19 inch tube
	Safety Glass	23D67	Models 26X45, 26X46

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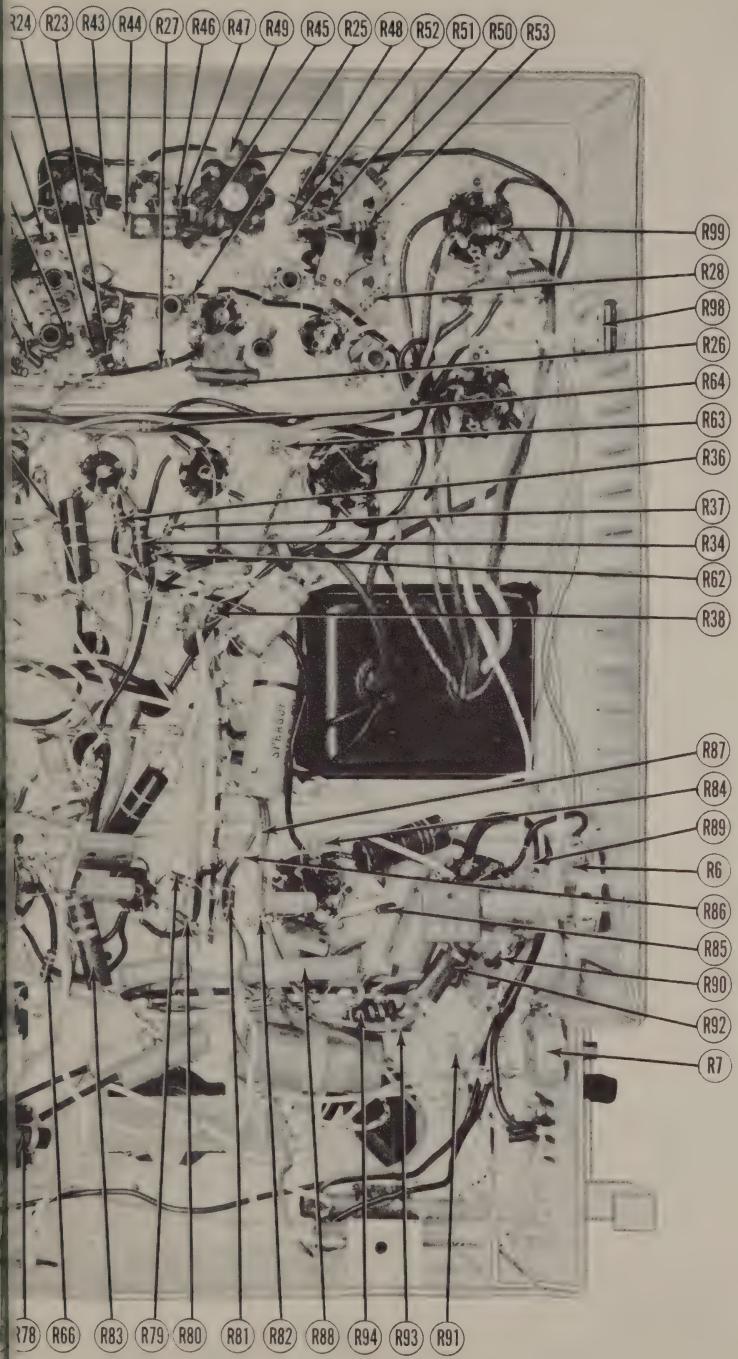

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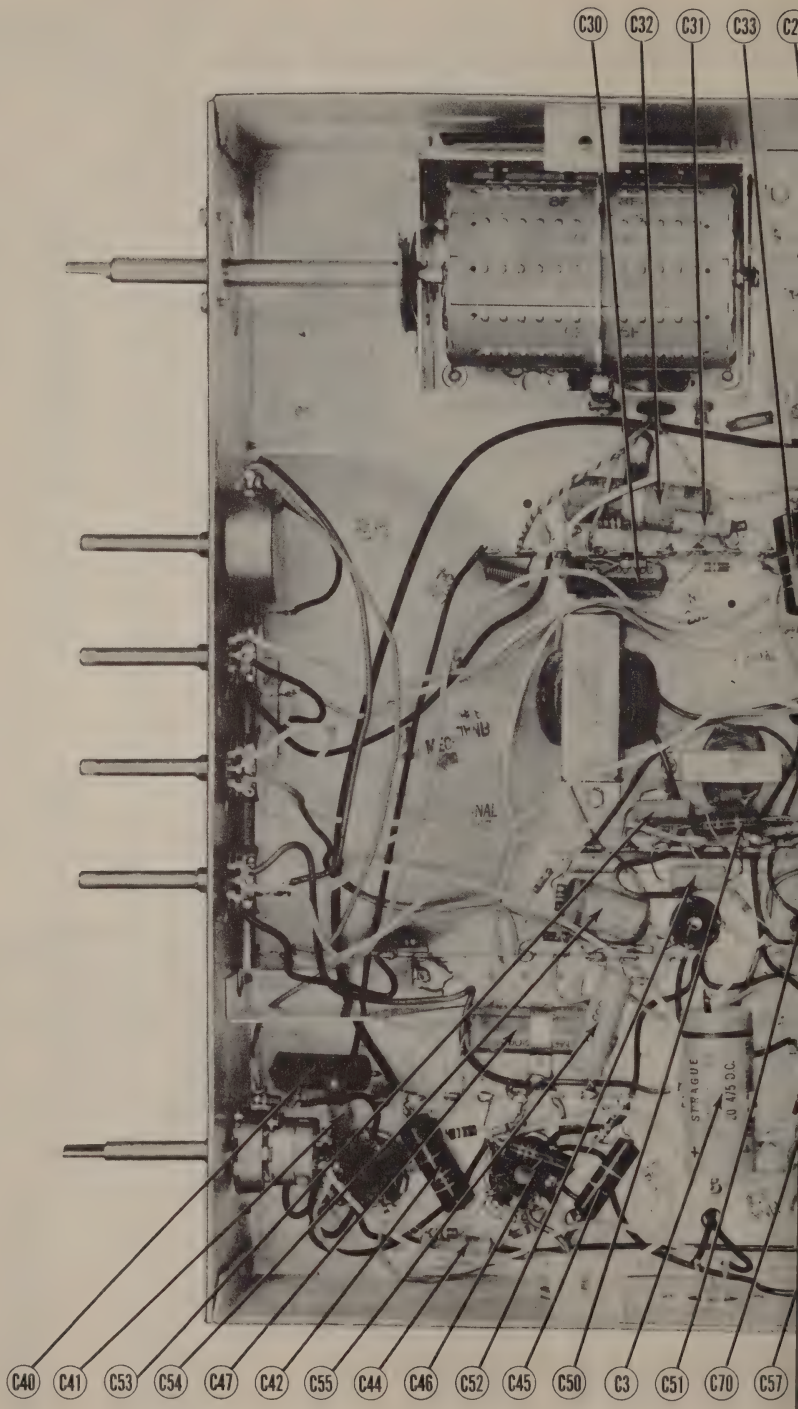

CHASSIS BOTTOM VIEW-

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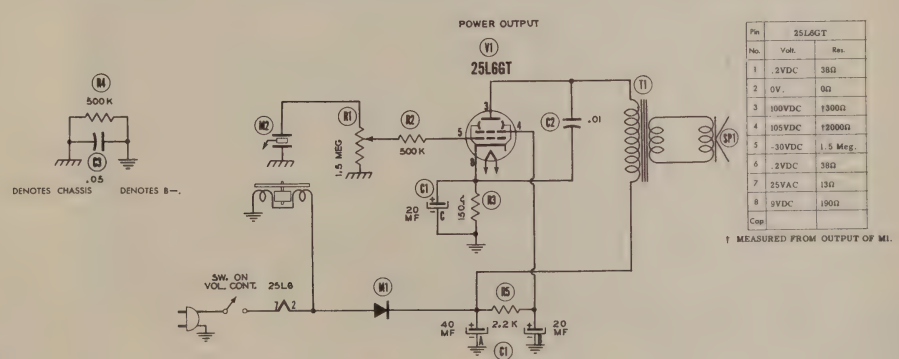
AIRCASTLE
MODEL TD-6

AIRCASTLE MODEL TD-6

TRADE NAME	Aircastle, Model TD-6
SUPPLIER	Spiegel Inc., 1061 W. 35th St., Chicago 9, Illinois
TYPE SET	AC Operated Phono Played with One Tube Amplifier
TUBES(ONE)	Type 25L6GT Power Output
POWER SUPPLY	110-120 Volts AC
RATING	.30 Amp. at 117 Volts AC



Pin No.	25L6GT Volt.	Res.
1	.2VDC	38Ω
2	0V.	0Ω
3	100VDC	†300Ω
4	105VDC	†2000Ω
5	-30VDC	1.5 Meg.
6	.2VDC	38Ω
7	25VAC	13Ω
8	9VDC	190Ω
Cap		

† MEASURED FROM OUTPUT OF M1.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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103-3

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Power Output	25L6GT	25L6GT	7AC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	CE-422-5	PRSA86D4A		EDL4215C		TA-305	Filter-Red
B	20	150							Filter-Yellow
C	20	25							Output Cath. Byp. -Blue
C2	.01	400		P488-01	D6-103	PTE4S1	821-01	TM-11	Output Plate Byp.
C3	.05	200	CO-105-2	P288-05	DF-503	PTE4S5		TM-15	Line Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1.5 Meg.	½	VC-150-S	Q13-139	AG-66-Z	AN-76	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	K-155	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	500KΩ		RC-500-5	BTS-470K	Output Grid
R3	150Ω			BW-½-150	Output Cathode
R4	500KΩ		RC-500-5	BTS-470K	Isolation
R5	2200Ω		RC-220-5	BTS-2200	Filter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	4.3KΩ	3Ω	300Ω	.5Ω	TS-250-0	A-3876 ①	A-2928 ①	RO-6 ①	① Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-113 *		
SP1	PM	3Ω	SP-400	MOD. P4-X	4A07 *	* Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

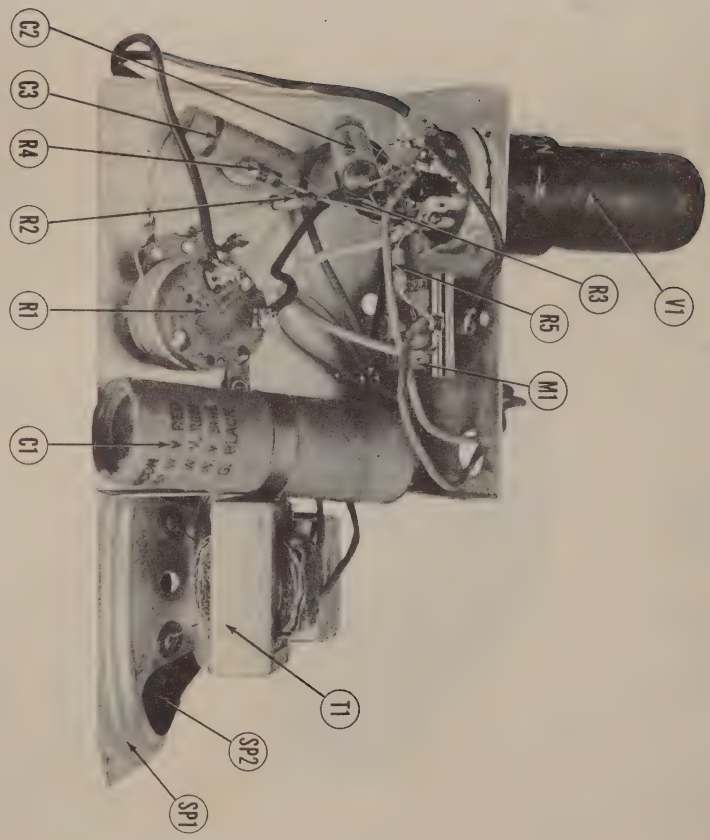
SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: AIRCASTLE PART No.	SYLVANIA PART No.		NOTES
M1	.054A	SL-650-M	NB-5		

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: AIRCASTLE PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	REMARKS
M2	CA-923	L-92-33 507-L-92-33		W53MG 901MG	A64MG	Complete arm

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.



PHOTOFACT* Folder

ANDREA MODELS

CO-VK15, CO-VK16 (CH. VK1516)

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MODEL CO-VK16

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CO-VK15, CO-VK16 (CH. VK1516)

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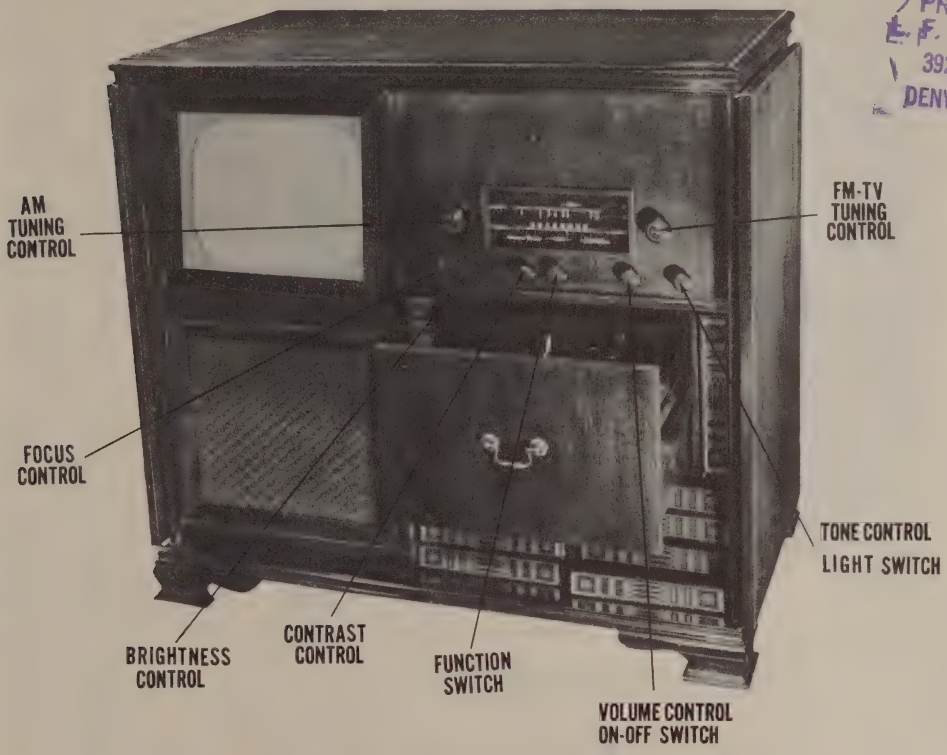

ANDREA
MODELS CO-VK15, CO-VK16 (Ch. VK1516)

ANDREA MODEL CO-VK16

TRADE NAME	Andrea, Models CO-VK15, CO-VK16 (Ch. VK1516)
MANUFACTURER	Andrea Radio Corp., 27-01 Bridge Plaza Worth, Long Island City, New York
TYPE SET	Phono-AM-FM-TV Receiver
TUBES	Thirty
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	Radio-1.2 Amp. at 117 Volts AC, TV 3.3 Amp. at 117 Volts AC
TUNING RANGE	540-1620KC, FM-TV 44 thru 216MC (Continuous Tuning)

INDEX

Alignment Instructions 6, 7
"CRT Screen" Control Adjustment 20
Dial Cord Stringing 19
Disassembly Instructions 20
High Voltage Oscillator Adjustment 20
Horiz. Oscillator Alignment 20
Parts List and Description 13, 14, 15, 16
Photographs
Cabinet-Rear View 19
Photographs (continued)
Capacitor Identification 11, 18
Chassis-Top View 3
High Voltage Supply 10
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

RECORD CHANGER-WEBSTER CHICAGO MODEL 356

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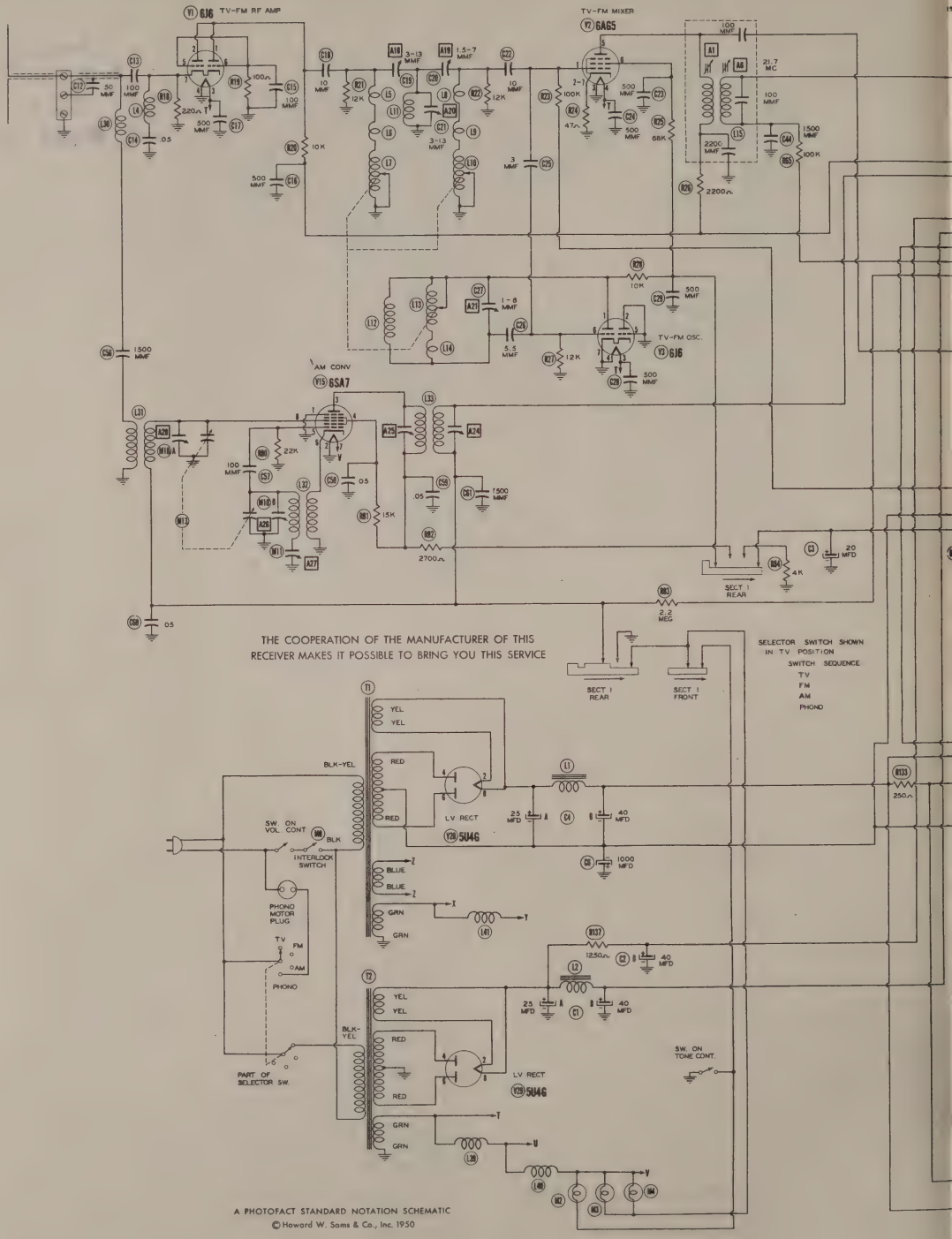
Y1 6J6 TV-FM RF AMP
TV-FM MIXER
Y7 6AG5
AM CONV
Y15 6SA7
TV-FM OSC.
Y3 6J6
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
SELECTOR SWITCH SHOWN
IN TV POSITION
SWITCH SEQUENCE
TV
FM
AM
PHONO
SECT 1
REAR
SECT 1
FRONT
SW. ON
VOL. CONT
INTERLOCK
SWITCH
PHONO
MOTOR
PLUG
PHONO
PART OF
SELECTOR SW.
LV RECT
Y29 5U4G
SW. ON
TONE CONT.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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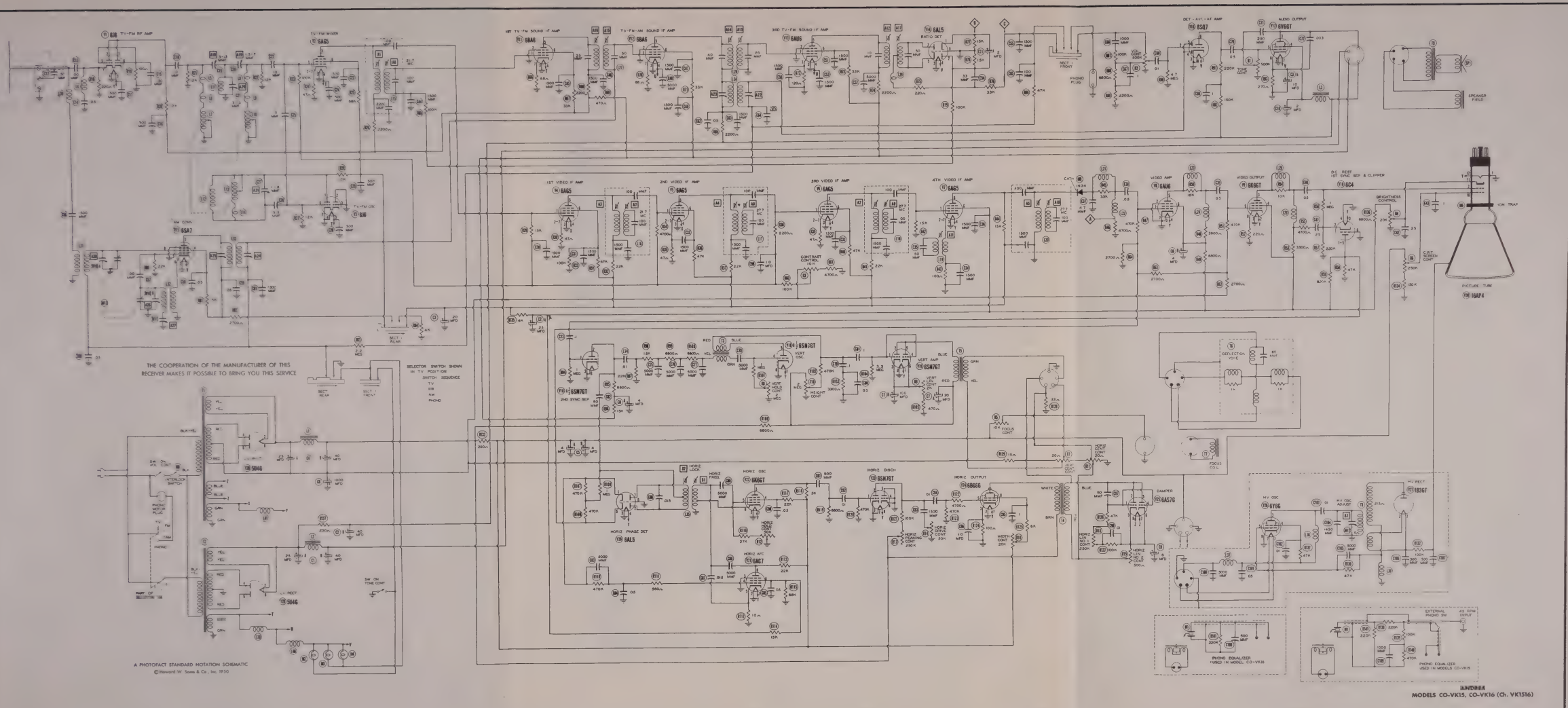
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
SELECTOR SWITCH SHOWN IN TV POSITION
SWITCH SEQUENCE
TV
FM
AM
PHONO
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1950
ANDREA
MODELS CO-VK15, CO-VK16 (Ch. VK1516)

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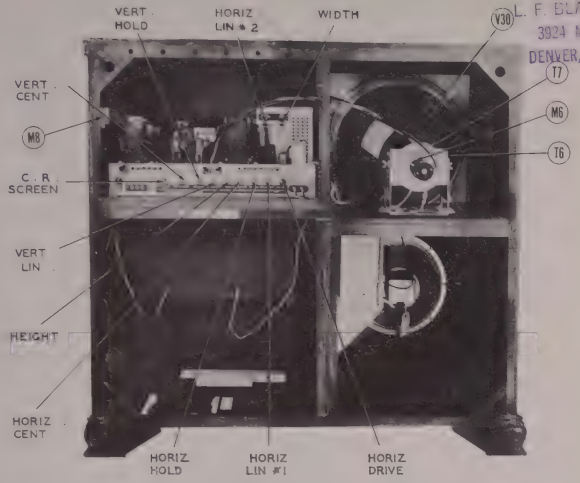
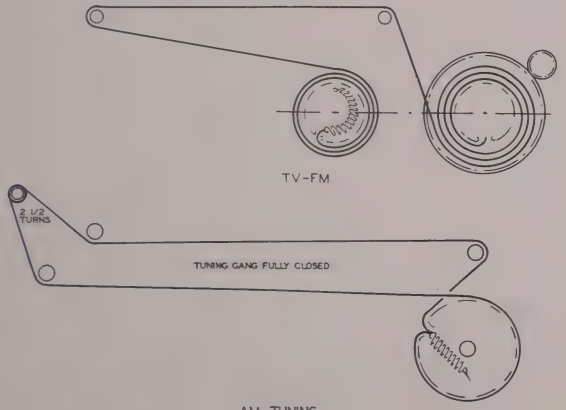


CABINET-REAR VIEW



DIAL CORD STRINGING

HORIZONTAL OSCILLATOR ALIGNMENT

HORIZONTAL OSCILLATOR ALIGNMENT CHECK:

While receiving a television signal turn the horizontal hold control fully counter-clockwise. Remove the picture momentarily by turning the contrast control fully counter-clockwise and then return it to its normal operating position. The picture should pull back into synchronization.

Now turn the horizontal hold control fully clockwise. Remove the picture momentarily by turning the contrast control fully counter-clockwise and then return to its normal operating position. The picture should pull back into synchronization.

If receiver synchronizes properly under these checks it is not necessary to align the horizontal oscillator. However, if the picture is not normal or stable, the horizontal oscillator must be aligned.

SLIGHT RETOUCH ALIGNMENT

If the receiver failed in the above check at either extreme of the hold control, it may be possible to align the horizontal oscillator by making slight adjustments.

Tune in a TV station and adjust fine tuning for best sound quality. Adjust vertical hold control to vertically synchronize the picture. Adjust the contrast control to slightly less than normal. Turn the horizontal hold control to the extreme position in which the oscillator falls out of synchronization. Momentarily remove the signal. Adjust B1 (rear of chassis) until the oscillator pulls into synchronization. Check hold and pull-in as outlined above.

COMPLETE ALIGNMENT

Tune in a TV station for the best sound quality. Adjust vertical hold control to vertically synchronize the picture. Adjust the contrast control to slightly less than normal.

Adjust B2 until the blanking bar, which may appear in the picture, moves to the right and off the raster. If ripples occur in the raster, turn B2 in a clockwise direction until the unstable condition is removed. The length of this adjustment screw in its correct position is usually about 1/2 inch beyond the bushing.

Turn horizontal hold control fully counter-clockwise and adjust B2 clockwise until picture falls to synchronize. Now slowly turn B2 counter-clockwise to the point where the picture synchronizes. Readjust B2 so that the left side of the picture is close to the left side of the raster but does not fold over.

Turn the horizontal hold control fully clockwise. The right side of the picture should be close to the right side of the raster, but should not fold over. If it does, readjust B1.

Momentarily remove the signal. When signal is restored, the picture should fall into synchronization. If it does not, turn B2 counter-clockwise until picture falls into synchronization.

Turn horizontal hold control fully counter-clockwise. Picture should fall back into synchronization after momentary removal of the signal.

If picture fails to synchronize after momentary removal of the signal at both extremes of the horizontal hold control, there may be insufficient pull-in range. However, if picture will pull in through 3/4 of the hold control range, operation should be satisfactory as excessive pull-in is objectionable. Excessive pull-in makes the control circuits more sensitive which may result in their being triggered by noise pulses. Also the vertical synchronizing and equalizing pulses may cause a bend in the upper part of the picture.

HIGH VOLTAGE OSCILLATOR ADJUSTMENT

The VTVM used to measure the high voltage must have at least 500 megohms resistance.

Connect the high voltage probe of a VTVM to the end of the high voltage lead.

Adjust the high voltage oscillator adjustment (B3) until the VTVM reads 13KV.

"CRT SCREEN" CONTROL ADJUSTMENT

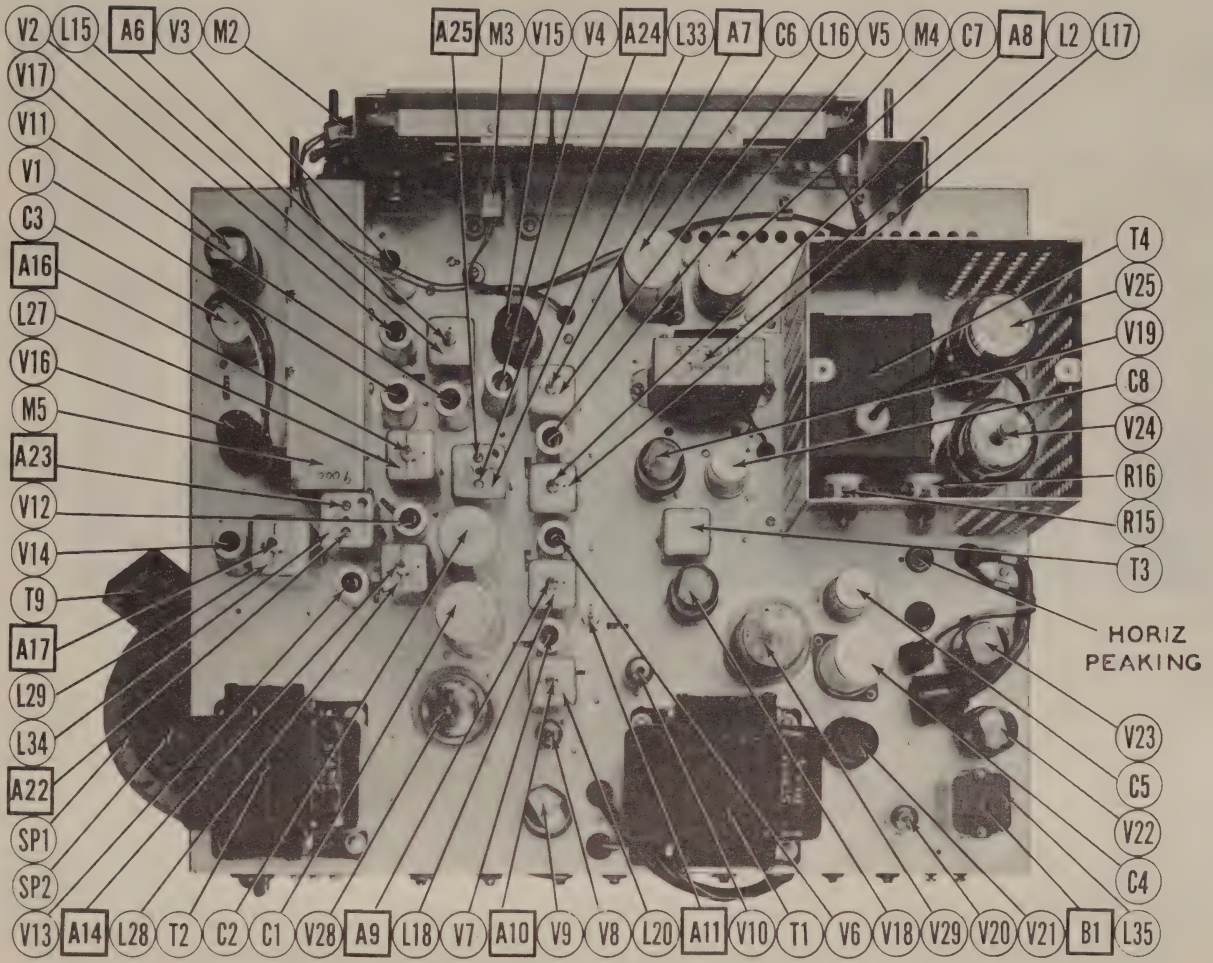
Turn the contrast control to maximum counter-clockwise.

Adjust the brightness control to read -35 volts on a VTVM connected between the arm (center terminal) of the control and chassis.

Adjust the "CRT SCREEN" control (R6) until the raster on the picture tube just disappears.

DISASSEMBLY INSTRUCTIONS

1. Loosen set screw in tuning and tone knobs. Remove these three knobs. Remove five push-on type control knobs.
2. Remove twenty-nine screws holding rear covers. Remove covers.
3. Remove two screws holding power switch to side of cabinet.
4. Remove picture tube socket. Disconnect focus and deflection plugs.
5. Remove phono motor plug and phono input connections at rear of receiver chassis.
6. Remove HV plug from chassis. Loosen screw grounding HV lead shield and remove.
7. Disconnect speaker plug near front of receiver chassis.
8. Remove four 7/16" hex head bolts holding chassis at bottom. Remove chassis.
9. Remove HV unit by disconnecting snap-on type HV lead at picture tube.
10. Remove ground lead from yoke support connection.
11. Remove two screws at rear holding unit to metal cabinet support. Slide unit to rear and remove.
12. To remove speaker: Remove four 5/16" hex nuts holding speaker to cabinet.



CHASSIS TOP VIEW

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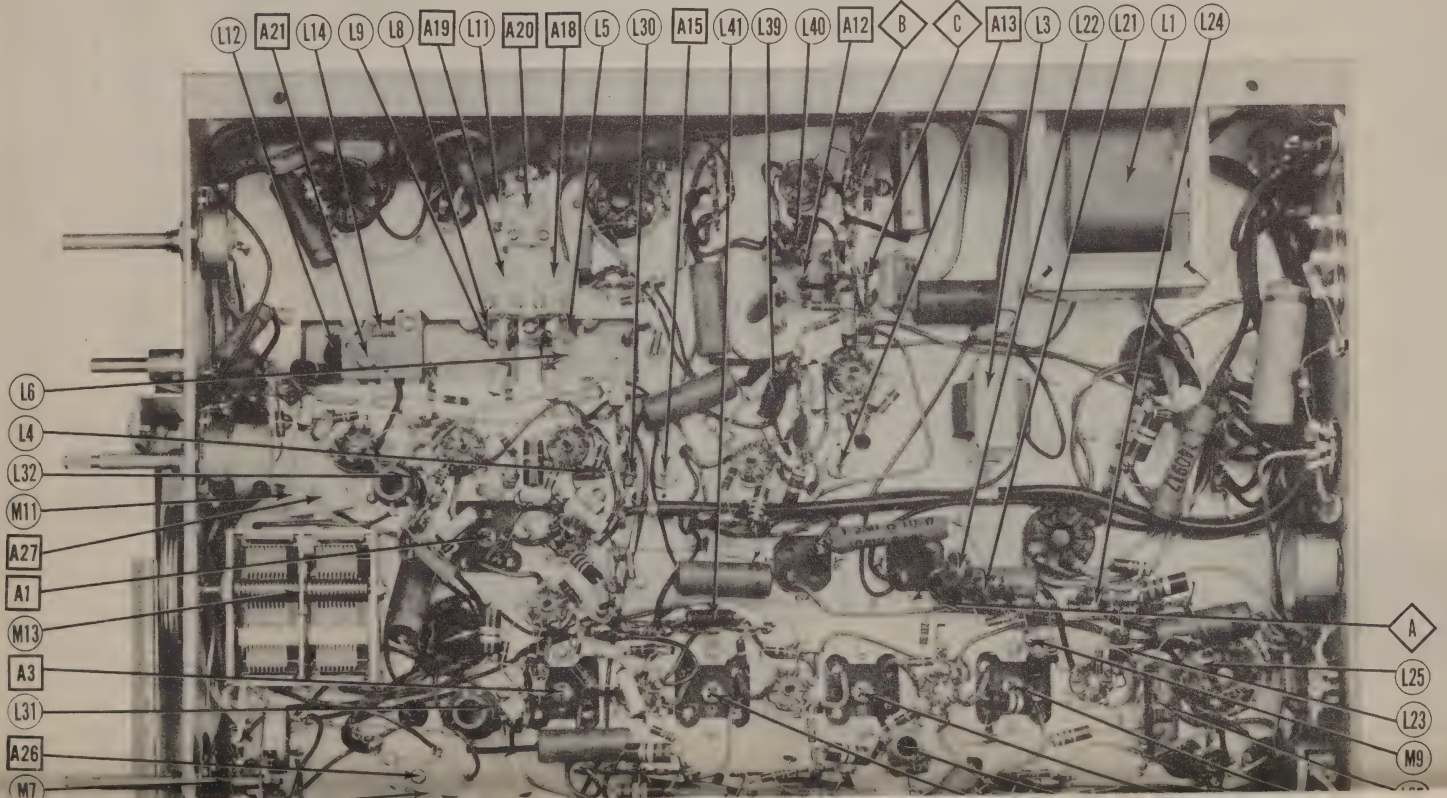
L12
A21
L14
L9
L8
A19
L11
A20
A18
L5
L30
A15
L41
L39
L40
A12
B
C
A13
L3
L22
L21
L1
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L25
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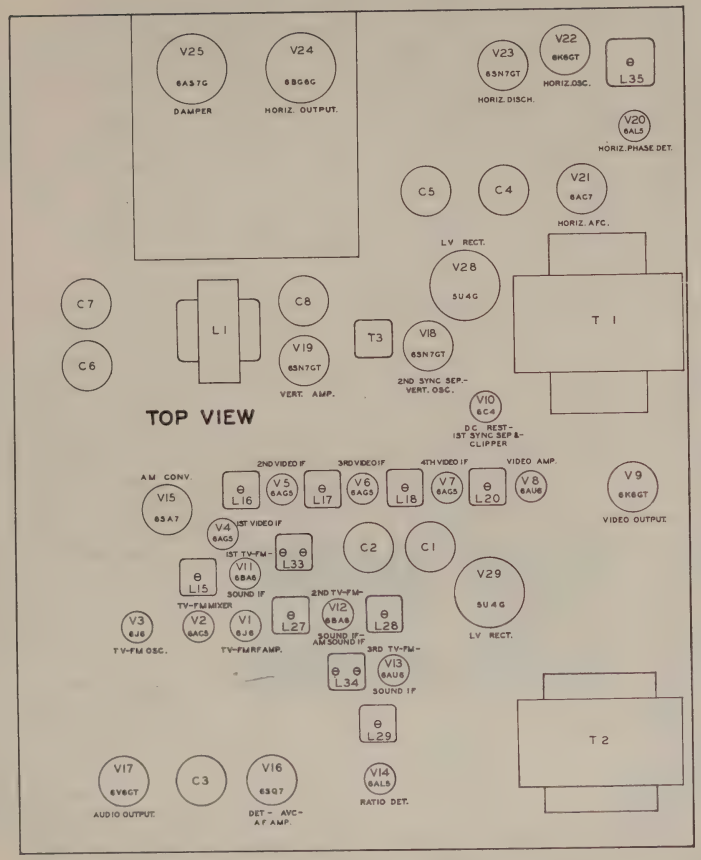
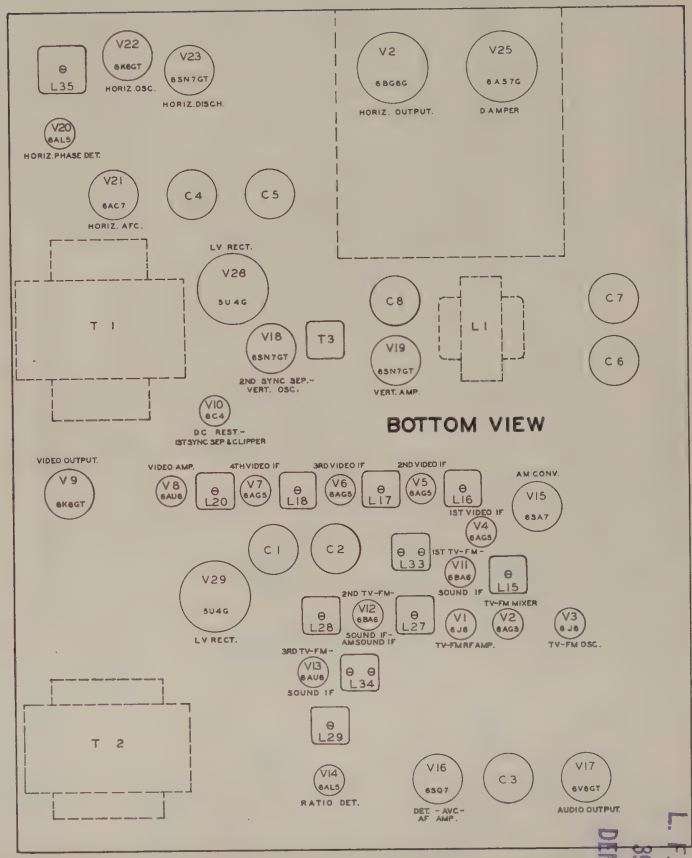
M9





TUBE PLACEMENT CHART

MODELS CO-VK15, CO-VK16 (Ch. VK1516)

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TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set dial pointer turn the tuning shaft fully counter-clockwise and set the pointer to the left hand edge of the channel 1 calibration mark.
The high voltage shock hazard may be eliminated by disconnecting the power plug between the high voltage power supply and the main chassis.
Turn the function selector switch to "TV" (maximum counter-clockwise).

VIDEO IF ALIGNMENT

Remove the local oscillator tube (V3) from its socket to eliminate the possibility of erroneous indications.
Adjust the contrast control to read -5 volts on a VTVM connected between the arm of the control and chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer tube (V2). Low side to chassis.	24MC (10MC SWP)	21.7MC 22.5MC 26.2MC 27.7MC	Any	Vert. Amp. to Point (A). Low side to chassis.	A1, A2, A3, A4, A5	Adjust for response curve similar to figure 1. The low frequency skirt is principally effected by A1, the high frequency skirt by A2 and the flatness of the center region by A3, A4, and A5.
2.	Direct	"	Not used	21.7MC (400 ∿ Mod.)	"	"	A6, A7	Adjust for MINIMUM 400 ∿ indication on scope.
3.	Direct	"	Not used	27.7MC (400 ∿ Mod.)	"	"	A8, A9, A10	"
4.	Direct	"	24MC (10MC SWP)	21.7MC	"	"	A-11	Adjust for minimum amplitude of the peak just below 21.7MC on response curve.

SOUND IF ALIGNMENT

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V12). Low side to chassis.	21.7MC (450KC Sweep)	21.7MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A12, A13, A14	Disconnect stabilizer capacitor C11. Adjust for maximum amplitude and symmetry as per figure 2.
6.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V11). Low side to chassis.	"	"	"	"	A15, A16	"
7.	.01MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A17	Reconnect capacitor C11. Adjust A17 so 21.7MC occurs at center of crossover lines as per figure 3. Slightly retouch A12 for maximum amplitude and straightness of crossover lines.

RF AND MIXER ALIGNMENT

The RF and mixer lines of this receiver are pre-set at the factory and are normally very stable. Alignment should not be attempted unless they are definitely known to be out of alignment.
A sweep generator with a maximum output of at least .5 volt is required to properly align the RF and Mixer portion of this receiver.
Unsolder the blue lead from pin 5 of the mixer tube (V2).
Connect pins 5 and 6 of V2 together with a short piece of wire.
Connect the vertical amplifier input of the oscilloscope to the short piece of wire. Connect the low side to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to left hand "A" terminal on antenna terminal strip. Low side to right hand "A" terminal.	57MC (10MC SWP)	55.25MC 59.75MC	2	See instructions above	A18, A19, A20	Adjust for response curve similar to figure 4 with markers as shown.
9.	Direct	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	L5, L8	SLIGHTLY expand or compress coil turn for response similar to figure 6.
10.	Direct	"	63MC (10MC SWP)	61.25MC 65.75MC	3	"		Check for response similar to figure 4.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
11.	Direct	"	177MC (10MC SWP)	175.25MC 179.75MC	7	"		Check for response similar to figs. 5 and 6
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			207MC (10MC SWP)	205.25MC 209.75MC	12			
			213MC (10MC SWP)	211.25MC 215.75MC	13			

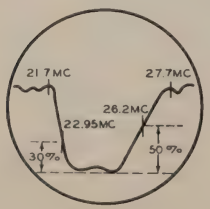

FIG. 1

FIG. 2

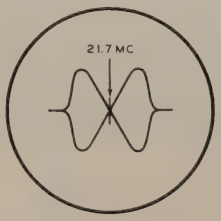

FIG. 3

TV ALIGNMENT INSTRUCTIONS (CONT.)

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OSCILLATOR ALIGNMENT

Replace the local oscillator tube (V3) in its socket.
Remove the wire connecting pins 5 and 6 of V2.
Reconnect the blue lead to pin 5 of V2.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	Direct	High side to left hand "A" terminal on antenna terminal strip. Low side to right hand "A" terminal.	59.75MC (Unmod.)	2	DC Probe to Point C. Common to chassis.	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
13.	Direct	"	215.75MC	13	"	L14	SLIGHTLY expand or compress coil turns for zero reading as obtained in step 12.
14.	Direct	"	209.75MC	12	"		Check all other channels to see that zero reading as obtained in step 12 occurs at the proper dial setting as the sound carrier frequency for each channel is fed into the receiver. If necessary repeat steps 12 and 13 for optimum results on all channels.
			203.75MC	11			
			197.75MC	10			
			191.75MC	9			
			185.75MC	8			
			179.75MC	7			
			87.75MC	6			
			81.75MC	5			
			71.75MC	4			
			65.75MC	3			
			59.75MC	2			

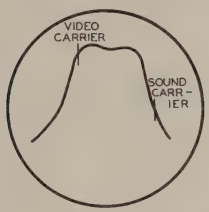


FIG.4

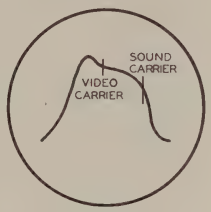


FIG.5

FIG.6

RADIO ALIGNMENT INSTRUCTIONS

Turn the function selector switch to "AM" (third position clockwise).
To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
15	.01MFD	High side to stator on front section of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	AM (third position clock-wise)	Tuning gang fully open	Across voice coil	A22, A23, A24, A25	Adjust for maximum output.
16	.01MFD	"	1600KC	"	1600KC	"	A26	"
17	.01MFD	"	600KC	"	600KC	"	A27	Adjust for maximum output. Repeat steps 15 and 16 until no further improvement can be made.
18	200MMFD	High side to left hand "A" terminal. Low side to chassis.	1600KC	"	1600KC	"	A28	Adjust for maximum output.

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	140VDC	140VDC	6.3VAC	0V.	0V.	0V.	8.6VDC		
V 2	6AG5	-5.4VDC	0V.	0V.	6.3VAC	245VDC	250VDC	0V.		
V 3	6J6	160VDC	0V.	6.3VAC	0V.	0V.	§-6VDC	0V.		
V 4	6AG5	-6.6VDC	0V.	0V.	6.3VAC	250VDC	165VDC	0V.		
V 5	6AG5	-6.8VDC	0V.	0V.	6.3VAC	250VDC	250VDC	0V.		
V 6	6AG5	-6.8VDC	0V.	0V.	6.3VAC	250VDC	250VDC	0V.		
V 7	6AG5	-.1VDC	1VDC	0V.	6.3VAC	125VDC	140VDC	1VDC		
V 8	6AU6	-1.5VDC	0V.	0V.	6.3VAC	110VDC	120VDC	0V.		
V 9	6K6GT	0V.	6.3VAC	105VDC	140VDC	-2VDC	-6.5VDC	0V.	4VDC	
V 10	6C4	6.7VDC	0V.	6.3VAC	0V.	6.7VDC	0V.	2.7VDC		
V 11	6BA6	-.1VDC	0V.	0V.	6.3VAC	220VDC	110VDC	.8VDC		
V 12	6BA6	0V.	0V.	0V.	6.3VAC	230VDC	110VDC	.8VDC		
V 13	6AU6	0V.	0V.	0V.	6.3VAC	235VDC	140VDC	1.2VDC		
V 14	6AL5	.2VDC	-.2VDC	0V.	6.3VAC	-1.3VDC	0V.	.1VDC		
▲ V 15	6SA7	0V.	0V.	230VDC	105VDC	-.2VDC	0V.	6.3VAC	-.4VDC	
▲ V 16	6SQ7	0V.	-.3VDC	0V.	-.4VDC	-.4VDC	95VDC	6.3VAC	0V.	
▲ V 17	6V6GT	0V.	0V.	260VDC	260VDC	0V.	300VDC	6.3VAC	12VDC	
V 18	6SN7GT	-2VDC	85VDC	0V.	14VDC 11VDC	195VDC -.5VDC	0V.	6.3VAC	0V.	
V 19	6SN7GT	0V.	290VDC	7VDC 15VDC	0V.	290VDC	9VDC 15VDC	6.3VAC	0V.	
V 20	6AL5	-.5VDC	-4.2VDC	0V.	6.3VAC	-2VDC	0V.	-7.2VDC		
V 21	6AC7	0V.	0V.	0V.	-.8VDC	.1VDC	100VDC	6.3VAC	195VDC	
V 22	6K6GT	0V.	0V.	225VDC	210VDC	-29VDC -23VDC	0V.	6.3VAC	.2VDC	
V 23	6SN7GT	-55VDC	200VDC 100VDC	0V.	0V.	0V.	0V.	0V.	6.3VAC	
V 24	6BG6G	320VDC 240VDC	0V.	11VDC	0V.	-4.6VDC	-4VDC	6.3VAC	250VDC 205VDC	TOP CAP #
V 25	6AS7G	-55VDC -31VDC	*	-2.8VDC 28VDC	-55VDC -31VDC	*	-2.8VDC 28VDC	¶	¶	
V 26	6Y6G	0V.	¶	320VDC	120VDC	-41VDC	0V.	¶	0Ω	
V 27	1B3GT	* DO NOT MEASURE.								
V 28	5U4G	0V.	370VDC	0V.	370VAC	0V.	370VAC	0V.	370VDC	
V 29	5U4G	0V.	300VDC	0V.	300VAC	0V.	300VAC	0V.	300VDC	
V 30	16AP4	0V.	.4VDC	PIN 10 320VDC 110VDC	PIN 11 100VDC	PIN 12 6.3VAC				

▲ VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
¶ 6.3VAC MEASURED ACROSS FILAMENTS.
* DO NOT MEASURE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

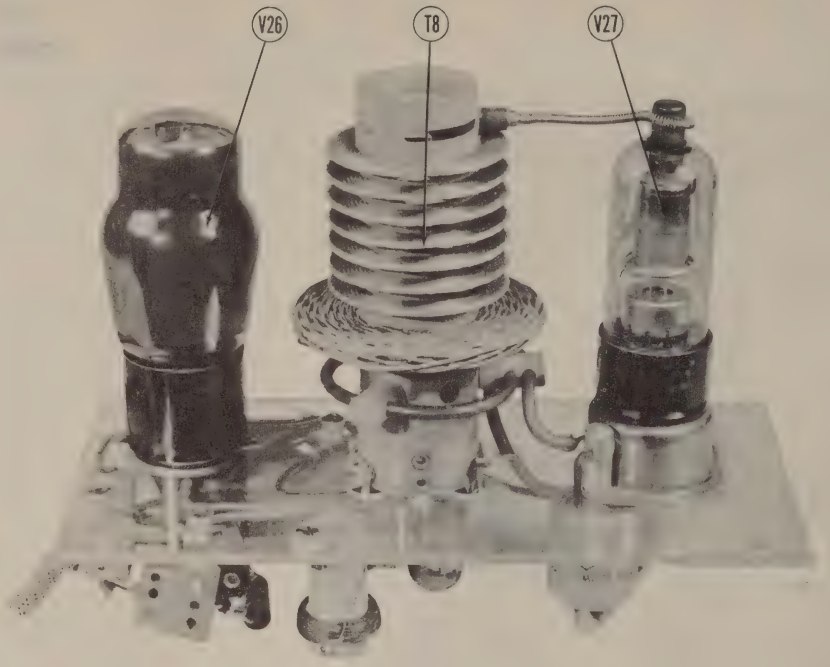
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†10KΩ	†10KΩ	.1Ω	0Ω	100Ω	100Ω	220Ω		
V 2	6AG5	200KΩ	47Ω	0Ω	.1Ω	†3KΩ	†70KΩ	47Ω		
V 3	6J6	†10KΩ	0Ω	.1Ω	0Ω	0Ω	12KΩ	0Ω		
V 4	6AG5	115KΩ	47Ω	0Ω	.1Ω	†22KΩ	†30KΩ	47Ω		
V 5	6AG5	105KΩ	47Ω	0Ω	.1Ω	†22KΩ	†47KΩ	47Ω		
V 6	6AG5	102KΩ	47Ω	0Ω	.1Ω	†22KΩ	†37KΩ	47Ω		
V 7	6AG5	15KΩ	100Ω	0Ω	.1Ω	†15KΩ	†4.2KΩ	100Ω		
V 8	6AU6	470KΩ	0Ω	0Ω	.1Ω	†15KΩ	†11KΩ	0Ω		
V 9	6K6GT	0Ω	.1Ω	†7.5KΩ	†4.2KΩ	470KΩ	1.5KΩ	0Ω	220Ω	
V 10	6C4	47KΩ	Inf.	.1Ω	0Ω	47KΩ	0Ω	220KΩ		
V 11	6BA6	215KΩ	0Ω	0Ω	.1Ω	†3KΩ	†33KΩ	68Ω		
V 12	6BA6	19Ω	0Ω	0Ω	.1Ω	†3KΩ	†33KΩ	68Ω		
V 13	6AU6	.1Ω	0Ω	0Ω	.1Ω	†2.5KΩ	†33KΩ	120Ω		
V 14	6AL5	15KΩ	15KΩ	0Ω	.1Ω	500KΩ	0Ω	500KΩ		
▲ V 15	6SA7	0Ω	0Ω	†3.3KΩ	†18.3KΩ	22KΩ	.5Ω	.1Ω	3 Meg.	
▲ V 16	6SQ7	0Ω	4.7 Meg.	0Ω	500KΩ	500KΩ	†370KΩ	.1Ω	0Ω	
▲ V 17	6V6GT	0Ω	0Ω	†1.5KΩ	†1.7KΩ	500KΩ	†100Ω	.1Ω	270Ω	
V 18	6SN7GT	1 Meg.	†22KΩ	0Ω	1 Meg. 3 Meg.	#470KΩ # 1 Meg.	0Ω	.1Ω	0Ω	
V 19	6SN7GT	3.3 Meg.	#7.5KΩ	2.5KΩ 470Ω	3.3 Meg.	#7.5KΩ	2.5KΩ 470Ω	.1Ω	0Ω	
V 20	6AL5	♦950KΩ	♦1.4 Meg.	0Ω	.1Ω	♦0Ω	0Ω	♦1.4 Meg.		
V 21	6AC7	0Ω	0Ω	0Ω	♦1.4 Meg.	10Ω	†15KΩ	.1Ω	#27KΩ	
V 22	6K6GT	0Ω	0Ω	#5.6KΩ	#22KΩ	27KΩ 77KΩ	6.8KΩ	.1Ω	10Ω	
V 23	6SN7GT	470KΩ	#100KΩ #350KΩ	0Ω	0Ω	0Ω	0Ω	0Ω	.1Ω	
V 24	6BG6G	#360Ω #20KΩ	0Ω	100Ω	Inf.	475KΩ	470KΩ	.1Ω	#6KΩ #26KΩ	
V 25	6AS7G	150KΩ 400KΩ	4Ω 17Ω	520Ω 0Ω	150KΩ 400KΩ	4Ω 17Ω	520Ω 0Ω	Inf.	Inf.	
V 26	6Y6G	Inf.	Inf.	#400Ω	#47KΩ	47KΩ	Inf.	Inf.	0Ω	
V 27	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP 220Ω
V 28	5U4G	Inf.	18KΩ	Inf.	70Ω	Inf.	70Ω	Inf.	18KΩ	
V 29	5U4G	Inf.	20KΩ	Inf.	24Ω	Inf.	24Ω	Inf.	20KΩ	
V 30	16AP4	0Ω	1.2 Meg.	PIN 10 #300Ω #100KΩ	PIN 11 15KΩ	PIN 12 .1Ω				

▲ VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.
† MEASURED FROM PIN 2 OF V29.
# MEASURED FROM PIN 2 OF V28.
♦ MEASURED FROM PIN 5 OF V20.

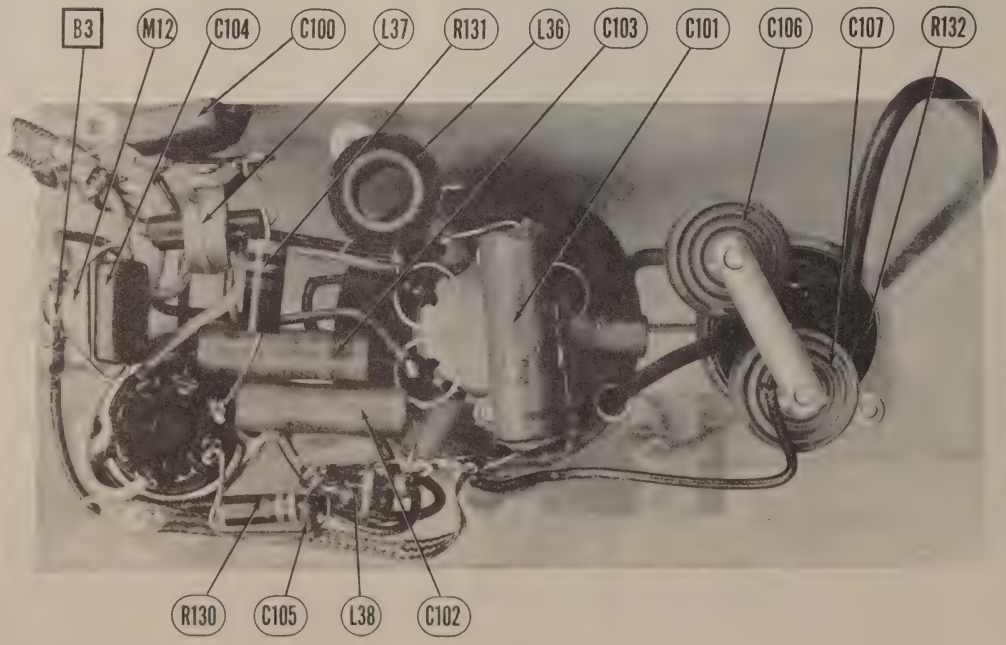
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



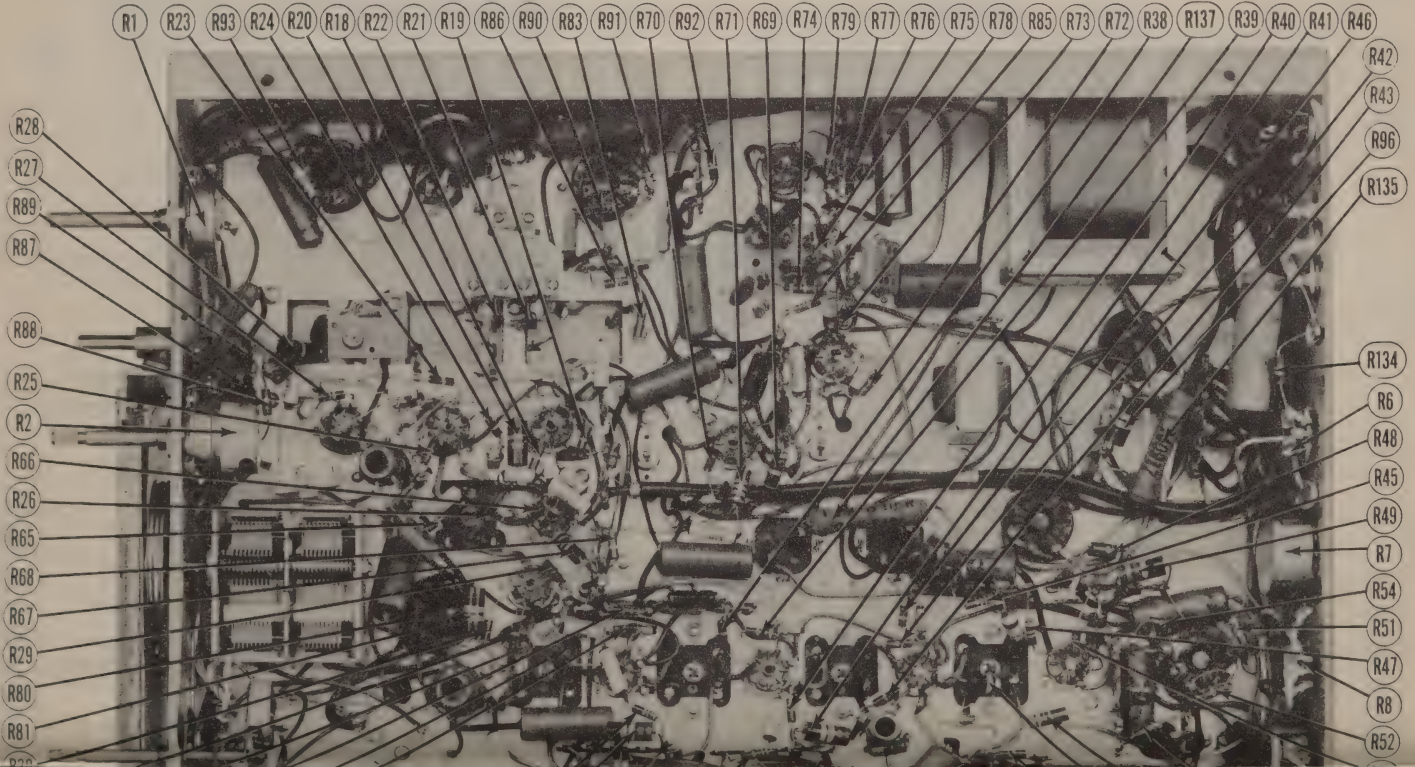
HIGH VOLTAGE SUPPLY-TOP VIEW



HIGH VOLTAGE SUPPLY-BOTTOM VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION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R93
R24
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R86
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R2
R66
R26
R65
R68
R67
R29
R80
R81
R134
R6
R48
R45
R49
R7
R54
R51
R47
R8
R52

PARTS LIST AND DESCRIPTIONS

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ANDREA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	TV-FM RF Amp.	6J6	6J6	7BF	
V2	TV-FM Mixer	6AG5	6AG5	7BD	
V3	TV-FM Osc.	6J6	6J6	7BF	
V4	1st Video IF	6AG5	6AG5	7BD	
V5	2nd Video IF	6AG5	6AG5	7BD	
V6	3rd Video IF	6AG5	6AG5	7BD	
V7	4th Video IF	6AG5	6AG5	7BD	
V8	Video Amp.	6AU6	6AU6	7BK	
V9	Video Output	6K6GT	6K6GT	7S	
V10	DC Rest. -1st Sync. Sep. -Sync. Clipper	6C4	6C4	6BG	
V11	1st TV-FM IF Amp.	6BA6	6BA6	7BK	
V12	2nd TV-FM IF Amp. -AM IF Amp.	6BA6	6BA6	7BK	
V13	3rd TV-FM IF	6AU6	6AU6	7BK	
V14	Ratio Det.	6AL5	6AL5	6BT	
V15	AM Converter	6SA7	6SA7	8R	
V16	DET. -AVC-AF	6SQ7	6SQ7	8Q	
V17	Audio Output	6V6GT	6V6GT	7AC	
V18	2nd Sync. Sep. -Vert. Osc.	6SN7GT	6SN7GT	8BD	
V19	Vert. Amp.	6SN7GT	6SN7GT	8BD	
V20	Hor. Phase Det.	6AL5	6AL5	6BT	
V21	Hor. AFC	6AC7	6AC7	8N	
V22	Hor. Osc.	6K6GT	6K6GT	7S	
V23	Hor. Disch.	6SN7GT	6SN7GT	8BD	
V24	Hor. Output	6BG6G	6BG6G	5BT	
V25	Damper	6AS7G	6AS7G	8BD	
V26	HV Osc.	6Y6G	6Y6G	7AC	
V27	HV Rect.	1B3GT	1B3GT	3C	
V28	LV Rect.	5U4G	5U4G	5T	
V29	LV Rect.	5U4G	5U4G	5T	
V30 A	Picture Tube	16AP4	16AP4	12D	
B	Picture Tube	15AP4	15AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ANDREA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	25	500	HCE-1321-1	AF58K		UP11BJ976		TVL-8	▲ Filter
B	40	500						TVA-134	▲ Filter
C2A	25	500	HCE-1321-1	AF58K		UP11BJ976		TVL-8	▲ Filter
B	40	500						TVA-134	▲ Filter
C3A	20	450	HCE-1324	AF42J		UP2045C		EL-2	■ Filter
B	10	25						TVA-4	▲ Output Cath. Byp.
C4A	25	500	HCE-1321	AF58K		UP11BJ976		TVL-8	▲ Filter
B	40	500						TVA-134	▲ Filter
C5A	4	450	HCE-1318	AF22J		UP4BJ241		EL-210	■ Filter
B	4	450							▲ Filter
C6	1000	25	HCE-1312-2	AF200A		UP1M-25		EL-122	Bias Filter
C7A	20	450	HCE-1319	AF4J20C		UP7BJ304		TVL-19	▲ Decoupling
B	100	100							▲ Vert. Output Cath. Byp.
C8A	4	450	HCE-1318	AF22J		UP4BJ241		EL-210	■ 2nd Sync. Sep. Decoup.
B	4	450							▲ 1st V. Amp. Decoup.
C9	8	100	HCE-1325	PRS150/8		BR815		UT-81	Damper Cath. Byp.
C10	2	450	HCE-1326	PRS450/4		BR245		UT-4	Output Screen Byp.
C11	2	25	HCE-1302	PRS150/4		BR215		TVA-12	Stabilizing Cap.
C12	50	500	HCM-1614A	1468-00005	D6-500		GP1K-50	1FM-45	Ant. Isolation
C13	100		HCC-1922	GP100M	D6-101		GP1K-100	1FM-31	Ant. Coupling
C14	.05	400	HCT-1003	P488-05				TM-15	Isolation
C15	100		HCC-1922	GP100M	D6-101		GP1K-100	1FM-31	RF Grid Filter
C16	500		HCC-1912	GP500M	D6-501		GP2K-500	1FM-35	RF Bypass
C17	500		HCC-1912	GP500M	D6-501		GP2K-500	1FM-35	RF Fil. Byp.
C18	10		HCC-1923	C110FN750	DN-10		N750K-10		RF Coupling
C19	3-13		HCV-2115				TS2A-N300-3-13		Variable Trimmer
C20	1.5-7		HCV-2116				TS2A-NPO-1.5-7		Variable Trimmer
C21	3-13		HCV-2115				TS2A-N300-3-13		Variable Trimmer
C22	10		HCC-1923	C110FN750	DN-10		N750K-10		RF Coupling
C23	500		HCC-1912	GP500M	D6-501		GP2K-500	1FM-35	Mixer Screen Bypass
C24	500		HCC-1912	GP500M	D6-501		GP2K-500	1FM-35	Mixer Fil. Byp.
C25	3		HCC-1921	C13CNPO	D2-3.3		NPOK-3		Osc. Coupling
C26	5.5		HCC-1925	CN5.5FN750	D2-4.7		N750K-5		Osc. Grid Cap.
C27	1-8		HCV-2117				532-1-8		Variable Trimmer
C28	500		HCC-1912	GP500M	D6-501		GP2K-500	1FM-35	Osc. Filament Byp.
C29	500		HCC-1912	GP500M	D6-501		GP2K-500	1FM-35	RF Bypass
C30	1500		HCC-1914	GP1500M	D6-152		GP2L-0015	1FM-215	Bias Filter
C31	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	1st V. IF Screen Byp.
C32	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	2nd V. IF Screen Byp.
C33	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	3rd V. IF Screen Byp.
C34	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	4th V. IF Cath. Byp.
C35	50			C150JN750	DN-51		N750L-47		Fixed Trimmer
C36	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	RF Bypass
C37	4.7		HCC-1903	GP5K	D2-4.7	5W5V5	NPOK-4.7	MS-55	V. Diode Filter
C38	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	Video Coupling
C39	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	Video Coupling
C40	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	Video Coupling
C41	.25	400	HCT-1015	P488-25		GT4P25		TC-2	Video Coupling
C42	.25	400	HCT-1015	P488-25		GT4P25		TC-2	Pic. Tube Cath. Byp.
C43	.1	600	HCT-1002	P688-1		PTE6P1		TM-1	Acc. Anode Bypass
C44	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	AVC Filter
C45	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	1st S. IF Screen Byp.
C46	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	1st S. IF Plate Dec.
C47	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	2nd S. IF Screen Byp.
C48	5000		HCC-1926	BPD-5	D6-502	1D5D5	811-005	29C1	2nd S. IF Fil. Byp.
C49	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	RF Bypass
C50	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	3rd S. IF Cath. Byp.
C51	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	3rd S. IF Screen Byp.

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ANDREA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C52	5000		HCC-1926	BPD-5	D6-502	1D5D5	811-005	29C1	3rd S. IF Plate Dec.
C53	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	3rd S. IF Fil. Byp.
C54	33			GP33K	D6-330	5W5Q4	GP1K-33	1FM-44	Diode Load Cap.
C55	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	De-emphasis
C56	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	RF Coupling
C57	100	500	HCM-1601A	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C58	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	Osc. Anode Bypass
C59	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	Conv. Decoup.
C60	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	AVC Filter
C61	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	AVC Filter
C62	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	2nd S. IF Plate Dec.
C63	1500		HCC-1914	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	2nd S. IF Plate Dec.
C64	100	500	HCM-1601A	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C65	100	500	HCM-1601A	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C66	1000	500	HCM-1610C	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Tone Comp.
C67	.1	200	HCT-1013	P288-1		PTE2P1		TM-1	Tone Comp.
C68	.01	400	HCT-1022	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C69	.1	600	HCT-1002	P688-1		PTE6P1		TM-1	A. Amp. Decoup.
C70	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	Audio Coupling.
C71	250	1000	HCM-1688AK						Tone Comp.
C72	.003	1200	HCT-1021	P1688-003		PTE16D3		MB-23	Output Plate Byp.
C73	.1	200	HCT-1013	P288-1		PTE4P1		TM-1	Sync. Coupling
C74	.01	600	HCT-1008	P688-01	D6-103	PTE6S1	811-01	TM-11	Vert. Sync. Coupling
C75	5000	500	HCM-1602A	1467-005	D6-502	1D5D5	811-005	1FM-25	Integrator Net.
C76	5000	500	HCM-1602A	1467-005	D6-502	1D5D5	811-005	1FM-25	Integrator Net.
C77	5000	1000	HCM-1602AK						Integrator Net.
C78	5000	1000	HCM-1602AK						Vert. Osc. Grid Cap.
C79	.1	600	HCT-1002	P688-1		PTE6P1		TM-1	Vert. Discharge
C80	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	Vert. Discharge
C81	.1	600	HCT-1002	P688-1		PTE6P1		TM-1	Vert. Sweep Coupling
C82	60	500	HCM-1612D		D6-560		GP1K-56		Hor. Sync. Coupling
C83	5000	500	HCM-1602A	1467-005	D6-502	1D5D5	811-005	1FM-25	AFC Filter
C84	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	AFC Filter
C85	.05	400	HCT-1003	P488-05		PTE4S5		TM-15	Hor. AFC Screen Byp.
C86	5000	500	HCM-1602A	1467-005	D6-502	1D5D5	811-005	1FM-25	Hor. AFC Coupling
C87	.015	400	HCT-1023	P488-015		PTE6S15			Phase Shifter
C88	.015	400	HCT-1023	P488-015		PTE6S15			Fixed Trimmer
C89	5000	500	HCM-1602A	1467-005	D6-502	1D5D5	811-005	1FM-25	Hor. Osc. Grid Cap.
C90	.05	600	HCT-1012	P688-05		PTE6S5		TM-15	Hor. Osc. Screen Byp.
C91	500	1000	HCM-1609CK						Differentiator Net.
C92	.01	600	HCT-1008	P688-01	D6-103	PTE6S1	811-01	TM-11	Hor. Sweep Coupling
C93	1500	500	HCM-1615C	1467-0015	D6-152	1W5D15	GP2L-0015	1FM-215	Hor. Discharge
C94	.01	600	HCT-1008	P688-01	D6-103	PTE6S1	811-01	TM-11	Hor. Sweep Coupling
C95	.1	600	HCT-1002	P688-1		PTE6P1		TM-1	Hor. Output Screen Byp.
C96	1.0	100	HCT-1027	484-1.0		GT2W1		TC-10	Hor. Output Cath. Byp.
C97	60	500	HCM-1612D		D6-560		GP1K-56		Hor. Sweep Coupling
C98	.01	600	HCT-1008	P688-01	D6-103	PTE6S1	811-01	TM-11	Hor. Damper Grid Filter
C99	1.0	100	HCT-1027	484-1.0		GT2W1		TC-10	Bias Filter
C100	5000	500	HCM-1602A	1467-005	D6-502	1D5D5	811-005	1FM-25	RF Bypass
C101	.05	600	HCT-1012	P688-05		PTE6S5		TM-15	HV Osc. Decoup.
C102	.01	600	HCT-1008	P688-01	D6-103	PTE6S1	811-01	TM-11	HV Osc. Screen Byp.
C103	.01	600	HCT-1008	P688-01	D6-103	PTE6S1	811-01	TM-11	HV Osc. Feedback
C104	1450	500	HCM-1603D	1464-0015					Fixed Trimmer
C105	5000	500	HCM-1602A	1467-005	D6-502	1D5D5	811-005	1FM-25	HV Osc. Grid Cap.
C106	500	20000	HCH-2702-1		TV1-502				HV Filter
C107	500	20000	HCH-2702-1		TV1-502				HV Filter
C108	500	500	HCM-1609C	1468-0005	D6-501	5W5T5 *	GP2K-500	1FM-35	Tone Comp. *
C109	1000	500	HCM-1605A	1467-001	D6-102	1W5D1	GP2L-001	1FM-21	Tone Comp. †

* Used only in model CO-VK16.
† Used only in model CO-VK15.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ANDREA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	500KΩ	½	GRV-825				Tone control and touch light switch
R2A	500KΩ	½	GRV-826	Q18-133X	AT-88	BTSK-66-S	Volume control tapped at 70KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A per instructions
C	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R2A per instructions
R3	10KΩ	½	GRV-818-1				Contrast control
R4	20KΩ	4	GRV-817-1			SVP-996	Brightness control-Wire Wound
R5	10KΩ	4	GRV-806-1			SVP-995	Focus control-Wire Wound
R6A	250KΩ	½	GRV-822	Q11-130	AM-55-S	AN-50	C. R. Screen control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R6A per instructions
R7	20Ω	2	GRV-810-1	W-20 x 10 *	43-20 CT *	SVT-901	Vert. centering control tapped at 10Ω
R8A	2 Meg.	½	GRV-812-1	Q11-139	AM-83-S	AN-75	Vert. hold control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R8A per instructions
R9	2000Ω	2	GRV-824	W-2000 *	43-2000 *	V-131 *	Vert. linearity control-Wire Wound
R10A	2 Meg.	½	GRV-812-1	Q11-139	AM-83-S	AN-75	Height control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R10A per instructions
R11	20Ω	2	GRV-827				Horiz. centering control tapped at 5Ω
R12A	50KΩ	½	GRV-807-1	Q11-123	AM-44-S	AN-31	Horiz. hold control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R12A per instructions
R13A	250KΩ	½	GRV-822	Q11-130	AM-55-S	AN-50	Horiz. linearity #1 control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R13A per instructions
R14A	50KΩ	½	GRV-807-1	Q11-123	AM-44-S	AN-31	Horiz. drive control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R14A per instructions
R15	5000Ω	4	GRV-815-1		10-500 *	SVP-985	Horiz. linearity # 2 control-Wire Wound
R16	20KΩ	4	GRV-814-1		10-20,000	SVP-996	Width Control-Wire Wound
R17A	250KΩ	½	GRV-822	Q11-130	AM-55-S	AN-50	Horiz. peaking control
B	Shaft		Not Req.	RQ	KSS-3 *	AK-1	Attach to R17A per instructions

* File slot in shaft to duplicate original.

RESI

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ANDREA PART No.	IRC PART No.
R18	220Ω	½	GRC-218	
R19	100Ω	½	GRC-216	
R20	10KΩ 5%	2	GRC-263	
R21	12KΩ	½	GRC-272	
R22	12KΩ	½	GRC-272	
R23	100KΩ 20%	½	GRC-225	
R24	47Ω	½	GRC-211	
R25	68KΩ	½	GRC-204	
R26	2200Ω	½	GRC-219	BTS-2200
R27	12KΩ	½	GRC-272	
R28	10KΩ 5%	2	GRC-263	
R29	15KΩ 5%	½	GRC-223	
R30	47Ω	½	GRC-211	
R31	47KΩ	½	GRC-207	
R32	22KΩ	2	GRC-238	
R33	100KΩ 20%	½	GRC-225	
R34	4700Ω 5%	½	GRC-273	
R35	47Ω	½	GRC-211	
R36	47KΩ	½	GRC-207	
R37	22KΩ	2	GRC-238	
R38	2200Ω	½	GRC-219	BTS-2200
R39	47Ω	½	GRC-211	
R40	47KΩ	½	GRC-207	
R41	22KΩ	2	GRC-238	
R42	15KΩ 5%	½	GRC-223	
R43	100Ω	½	GRC-216	
R44	15KΩ	2	GRC-237	
R45	33KΩ 5%	½	GRC-260	BTS-33K-5%
R46	4700Ω	½	GRC-205	BTS-4700
R47	470KΩ	½	GRC-228	BTS-470K
R48	3900Ω 5%	1	GRC-262	BTA-3900-5%
R49	6800Ω	2	GRC-257	BT-2-6800
R50	18KΩ 5%	½	GRC-261	BTS-18K-5%
R51	470KΩ	½	GRC-228	BTS-470K
R52	220Ω	½	GRC-218	
R53	3300Ω	1	GRC-254	BTA-3300
R54	10KΩ 5%	½	GRC-222	BTS-10K-5%
R55	4700Ω 5%	½	GRC-273	BTS-4700-5%
R56	1 Meg.	½	GRC-274	BTS-1 Meg.
R57	220KΩ	½	GRC-270	BTS-220K
R58	47KΩ	½	GRC-207	BTS-47K
R59	820KΩ	½	GRC-246	BTS-820K
R60	100KΩ 20%	½	GRC-225	BTS-100K
R61	4700Ω	½	GRC-205	BTS-4700
R62	2700Ω	½	GRC-275	BTS-2700
R63	2700Ω	½	GRC-275	BTS-2700
R64	1500Ω	½	GRC-259	BTS-1500
R65	100KΩ 20%	½	GRC-225	BTS-100K
R66	68Ω	½	GRC-214	
R67	33KΩ	1	GRC-281	
R68	2200Ω	½	GRC-219	BTS-2200
R69	470Ω	1	GRC-282	BTA-470
R70	68Ω	½	GRC-214	
R71	33KΩ	1	GRC-281	
R72	120Ω	½	GRC-217	
R73	33KΩ	½	GRC-203	
R74	2200Ω	½	GRC-219	BTS-2200
R75	220Ω	½	GRC-218	
R76	15KΩ 5%	½	GRC-223	BTS-15K-5%
R77	15KΩ 5%	½	GRC-223	BTS-15K-5%
R78	33KΩ	½	GRC-203	BTS-33K
R79	100KΩ 20%	½	GRC-225	BTS-100K
R80	22KΩ	½	GRC-201	BTS-22K
R81	15KΩ	2	GRC-237	BT-2-15K
R82	2700Ω	½	GRC-275	BTS-2700
R83	2.2 Meg. 20%	½	GRC-230	BTS-2.2 Meg.
R84	4000Ω	25	GRW-520	
R85	2200Ω	½	GRC-219	BTS-2200
R86	47KΩ	½	GRC-207	BTS-47K
R87	100KΩ 20%	½	GRC-225	BTS-100K
R88	6800Ω	½	GRC-221	BTS-6800
R89	2200Ω	½	GRC-219	BTS-2200
R90	4.7 Meg. 20%	½	GRC-242	BTS-4.7 Meg.
R91	220KΩ	½	GRC-270	BTS-220K
R92	150KΩ	½	GRC-243	BTS-150K
R93	270Ω	2		BW-2-270
R94	1 Meg.	½	GRC-274	BTS-1 Meg.
R95	6800Ω	2	GRC-257	BT-2-6800
R96	15KΩ	2	GRC-237	BT-2-15K
R97	22KΩ	½	GRC-201	BTS-22K
R98	15KΩ	½	GRC-223	BTS-15K
R99	6800Ω	½	GRC-221	BTS-6800
R100	6800Ω	½	GRC-221	BTS-6800
R101	1 Meg.	½	GRC-274	BTS-1 Meg.
R102	470KΩ	½	GRC-228	BTS-470K
R103	3300Ω	½	GRC-220	BTS-3300
R104	3.3 Meg. 20%	½	GRC-206	BTS-3.3 Meg.
R105	470Ω	½	GRC-213	BTS-470
R106	6800Ω	2	GRC-257	BT-2-6800
R107	470KΩ	½	GRC-228	BTS-470K
R108	470KΩ	½	GRC-228	BTS-470K
R109	1 Meg. 5%	½	GRC-229	BTS-1 Meg-5%
R110	470KΩ	½	GRC-228	BTS-470K
R111	560Ω	½	GRC-250	BTS-560
R112	10Ω 5%	½	GRC-253	
R113	22KΩ	2	GRC-238	BT-2-22K
R114	15KΩ	½	GRC-290	BTS-15K
R115	68KΩ	½	GRC-204	BTS-68K
R116	27KΩ 20%	½	GRC-224	BTS-27K
R117	22KΩ	2	GRC-238	BT-2-22K
R118	5000Ω 5%	10	GRW-509	AB-5000
R119	6800Ω	½	GRC-221	BTS-6800
R120	470KΩ	½	GRC-228	BTS-470K
R121	100KΩ 20%	½	GRC-225	BTS-100K
R122	4700Ω	½	GRC-205	

TIONS (Continued)

RS

IDENTIFICATION CODES
RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.

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t. Amp. Grid
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iz. AFC Filter Network
iz. AFC Grid
iz. AFC Cathode
iz. AFC Plate
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iz. Discharge Grid
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RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ANDREA PART No.	IRC PART No.	
R123	470KΩ	½	GRC-228	BTS-470K	Horiz. Output Grid
R124	100Ω	2	GRC-235	BW-2-100	Horiz. Output Cathode
R125	6000Ω	5	GRW-521	AB-6000	Horiz. Output Screen-Wire Wound
R126	47KΩ	½	GRC-207	BTS-47K	Damper Grid
R127	100KΩ 20%	½	GRC-225	BTS-100K	Voltage Divider
R128	33Ω	½	GRC-289	BW-½-33	Horiz. Centering Control Shunt
R129	15Ω	2	GRC-287	BW-2-15	Voltage Divider
R130	47KΩ 20%	1	GRC-240	BTA-47K	HV Osc. Grid
R131	47KΩ 20%	2	GRC-264	BT-2-47K	HV Osc. Screen
R132	100KΩ 20%	½	GRC-225		HV Filter
R133	250Ω 5%	10	GRW-522	AB-250	Filter-Wire Wound
R134	150KΩ	½	GRC-243	BTS-150K	Voltage Divider
R135	4000Ω 5%	10	GRW-513	AB-4000-5%	Filter-Wire Wound
R136	6800Ω	½	GRC-221	BTS-6800	Voltage Divider
R137	1250Ω 5%	10	GRW-519	AB-1250-5%	Filter-Wire Wound
R138	220KΩ 20%	½	GRC-226	BTS-220K	Tone Comp. -See Note 2
R139	100KΩ 20%	½	GRC-225	BTS-100K	Tone Comp. -See Note 2
R140	470KΩ 20%	½	GRC-209	BTS-470K	Tone Comp. -See Note 2
R141	220KΩ 20%	½	GRC-226	BTS-220K	Phono Input Shunt-See Note 3

Note 1. Some models use 390Ω, 2 watt resistor in this application.
Note 2. Used in model CO-VK15 only.
Note 3. Model CO-VK15 use 470KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
T1	117VAC	740VCT	5VAC	6.3VAC	ST-3023	P-4010 ① ②	P-3169 ②	PV-200 ① ②	
	④ 2.1A	.230ADC	④ 3A	④ 6.5A		P-5014 ④			
T2	117VAC	600VCT	5VAC	6.3VAC	ST-3022	P-4010 ① ②	P-3165 ① ②	PV-200 ① ②	
	④ 1.2A	.220ADC	④ 3A	④ 3.5A					

① Drill new mounting holes.
② Add series resistor to reduce plate voltage.
④ Mount under chassis and use for SEC. 3

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T3	170Ω	1400Ω	ST-3020	A-8121 ③	A-4000 ③	TBO-2	Vert. Block Osc. Trans.
T4	50Ω	3.5Ω Tap ④ .4Ω	ST-3009				Hor. Output Trans.
T5	580Ω	6.8Ω	ST-3010	A-8115	A-3035 ①	TSO-1	Vert. Output Trans.
T6A	14Ω		ST-3013	DY-1	MD-12		Hor. Deflection Coil
B	64Ω						Vert. Deflection Coil
T7	8300Ω		ST-3014-2	"			Focus Coil
T8	.6Ω	215Ω	SA-322				HV Trans.
		SEC. 2					
		0Ω					

① Drill new mounting holes.
③ Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T9	4.5KΩ	4.1Ω	330Ω	.4Ω	Part of SP1	A-3877 ③	A-3019	RO-9 ③	③ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	ANDREA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	345Ω	4.1Ω	SL-4005		12E345S	
	CONE DIA.	V. C. DIA.				
SP2	11 1/2"	1 1/4"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ↶)	ANDREA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.230A	100Ω	5.3 Henries	ST-3017		C-2991 ①		① Drill new mounting holes.
L2	.220A	100Ω	5.3 Henries	ST-3017		C-2991 ①		
L3	.0025A	445Ω	7.8 Henries	ST-3021	C-1707 ③	C-2976 ①	R-1230	③ Drill one new mounting hole.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ANDREA PART No.	MEISSNER PART No.	
L4	Ant. Coil	.1Ω		SA-278		
L5	RF End Inductor	0Ω		SA-319		
L6	RF End Inductor	0Ω		SA-321		
L7	RF Coil	0Ω				Part of inductuner FM 5113-1
L8	Mixer Grid End Inductor	0Ω		SA-319		
L9	Mixer Grid End Inductor	0Ω		SA-320		
L10	Mixer Grid	0Ω				Part of inductuner FM 5113-1
L11	Band Pass	0Ω		SA-317		
L12	Osc. Shunt	0Ω		SA-316		
L13	Osc. Coil	0Ω				Part of inductuner FM 5113-1
L14	Osc. End Inductor	0Ω		SA-318		
L15	1st Video IF -Sound Take Off	.1Ω	0Ω	SA-289-1		
L16	2nd Video IF	.1Ω		SA-290-1		
L17	3rd Video IF	.1Ω		SA-291-1		
L18	4th Video IF	.1Ω		SA-291-1		
L19	4th Video IF Cath. Trap	.1Ω	.1Ω	SA-287		
L20	5th Video IF	.5Ω		SA-292-2		
L21	Peaking	8Ω		SA-284		Yellow identification dot
L22	Peaking	7Ω		SA-285		Green identification dot
L23	Peaking	8Ω		SA-284		Yellow identification dot
L24	RF Choke	8Ω		SA-284		Yellow identification dot
L25	Peaking	8Ω		SA-284		Yellow identification dot
L26	RF Choke	6Ω		SA-286		Blue identification dot
L27	1st TV-FM Sound IF	.1Ω	.1Ω	SA-312		
L28	2nd TV-FM Sound IF	.1Ω	.1Ω	SA-313		
L29	Ratio Det. Trans.	.1Ω	.1Ω	SA-311		
L30	AM Ant. Loading	.8Ω		SA-283		
L31	AM Ant.	34Ω	6Ω	SA-297-1	14-1071	
L32	AM Osc.	1Ω	5.4Ω	SA-298-1	14-1073	
L33	1st AM IF	18Ω	20Ω	SA-309-A	16-6658	
L34	2nd AM IF	18Ω	18Ω	SA-310-D	16-6660	
L35	Horiz. Osc. Trans.	44Ω	40Ω	SA-307		
L36	RF Choke	18.8Ω		SA-305		
L37	RF Choke	16Ω		SA-306		
L38	RF Choke	8Ω		SA-284		
L39	Fil. Choke	0Ω		SA-280		
L40	Fil. Choke	0Ω		SA-280		
L41	Fil. Choke	0Ω		SA-280		

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	ANDREA PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		8D *	"Q"	920W *	A62A A65MG	* Replaces complete tone arm assembly

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ANDREA PART No.		
M2	Bayonet	6-8	.25	Blue	FM-723		Type #44
M3	Bayonet	6-8	.25	Blue	FM-723		Type #44
M4	Bayonet	6-8	.25	Blue	FM-723		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	ANDREA PART No.	NOTES
M5	RF Tuner		
M6	Ion Trap	FM5164	
M7	Switch	FM5148	Function TV-FM-AM-Phono
M8	Switch	FM3105	Interlock
M9	Crystal	FM514-4	Video Detector 1N34
M10A	Trimmer	HCV2113	AM Ant. 2-22MMF
B	Trimmer		AM Osc. 2-22MMF Part of M10A
M11	Trimmer	HCV2114	AM Osc. 210-560MMF
M12	Trimmer	HCV2103	HV Osc.
M13	Tuning Cap.	HCV2112	AM Tuning
M14	Switch		For External 45RPM Player

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

C23
C26
C72
C71
C25
C22
C18
C20
C17
C70
C21
C19
C65
C69
C15
C61
C64
C62
C14
C52
C54
C63
C11
C51
C55
C53
C48
C10
C50
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C29
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C28
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C27
C16
C13
C44
C46
C57
C58
C45
C30
C31
C47
C49
C59
C38
C37
C34
C39
C33
C40
C36
C35
C79

PHOTOFACT* Folder

AUTOMATIC MODELS
TV-1249, TV-1250

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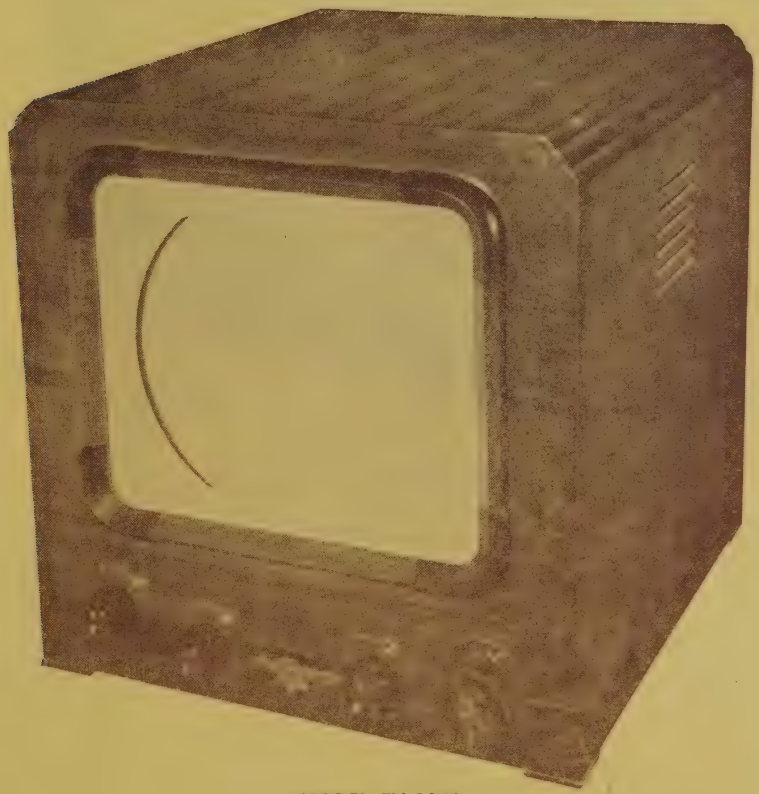

MODEL TV-1249

AUTOMATIC MODELS
TV-1249, TV-1250

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MODELS TV-1249, TV-1250

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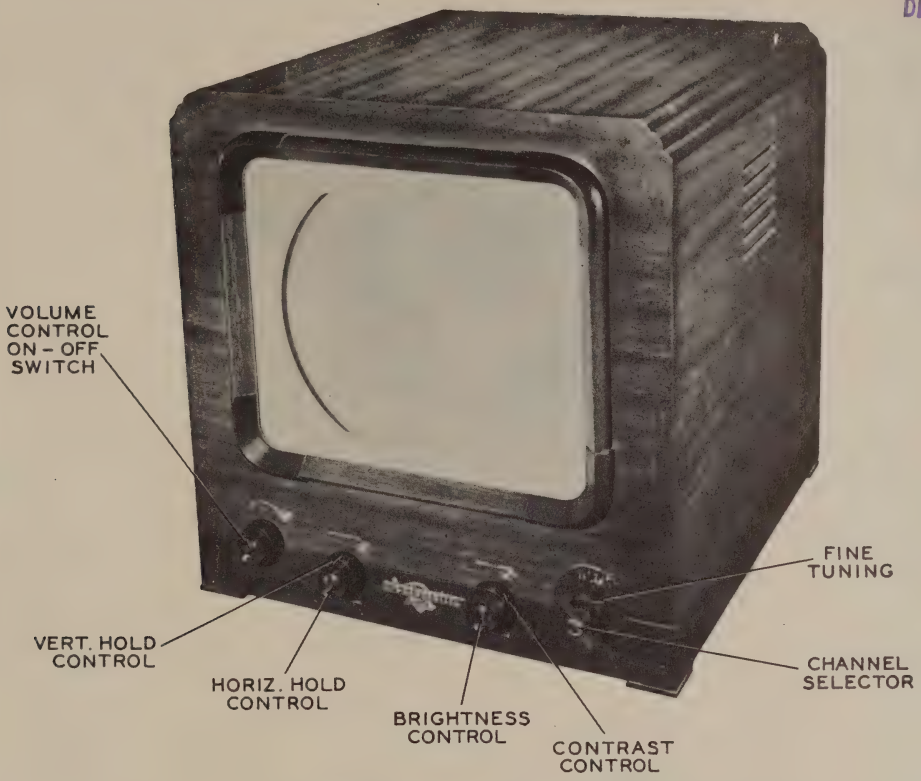

AUTOMATIC MODEL TV-1249

TRADE NAME	Automatic, Models TV-1249, TV-1250
MANUFACTURER	Automatic Radio Mfg., Co., Inc., 122 Brookline Ave., Boston 15, Mass.
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.5 Amp. at 117 Volts AC
TUNING RANGE–	Channels 2 thru 13

INDEX

Alignment Instructions 6, 7
Disassembly Instructions 13
Horiz. Sweep Circuit Adjustment 13
Parts List and Description 14, 15, 16
Photographs
Cabinet-Rear View 13
Capacitor Identification 11, 18
Chassis-Top View 3, 7
Photographs (continued)
RF Tuner 10
Resistor Identification 12, 17
Trans., Inductor and Alignment Identification 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

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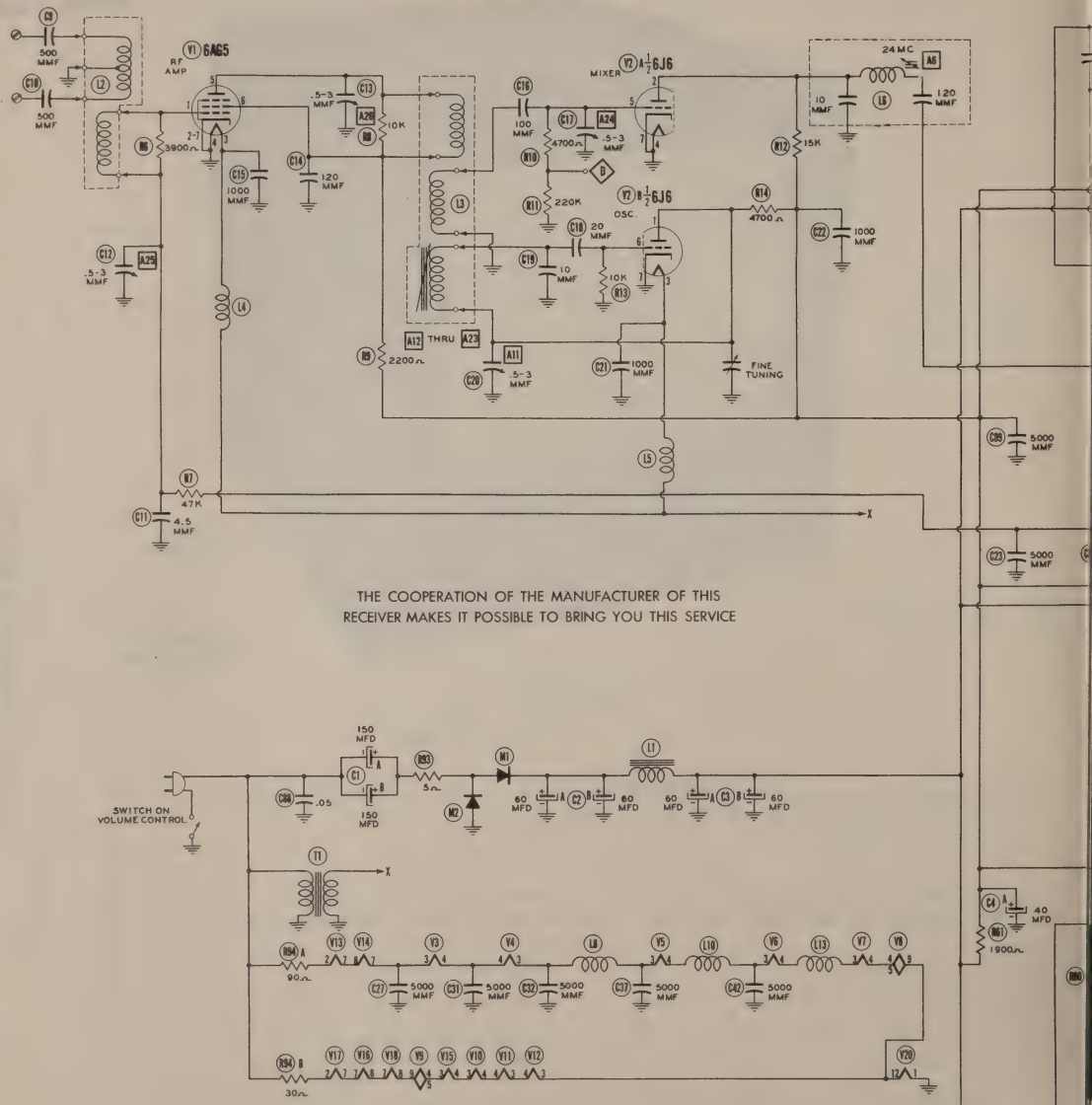

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DOTTED IN PARTS NOT USED IN ALL MODELS.
WHEN DOTTED IN PARTS ARE USED POINTS
MARKED X ARE BROKEN.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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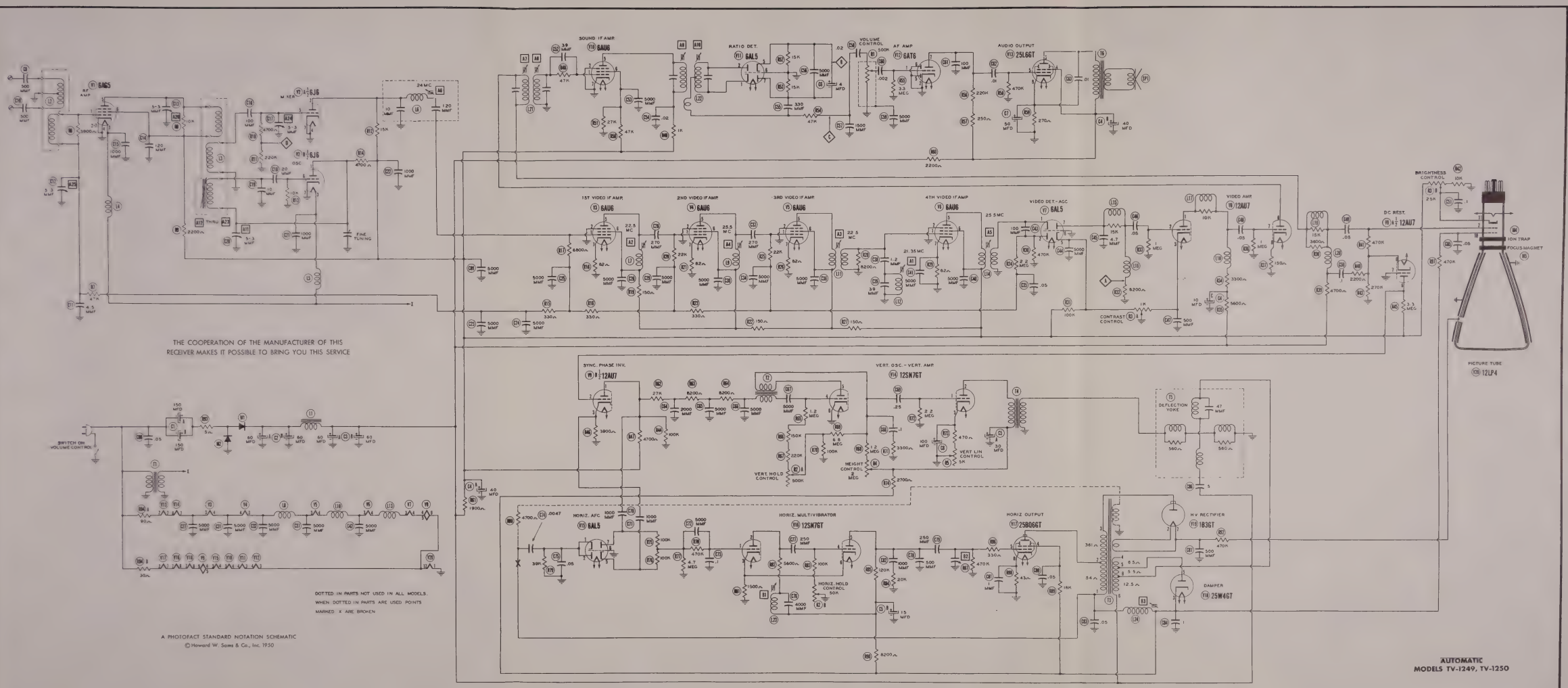
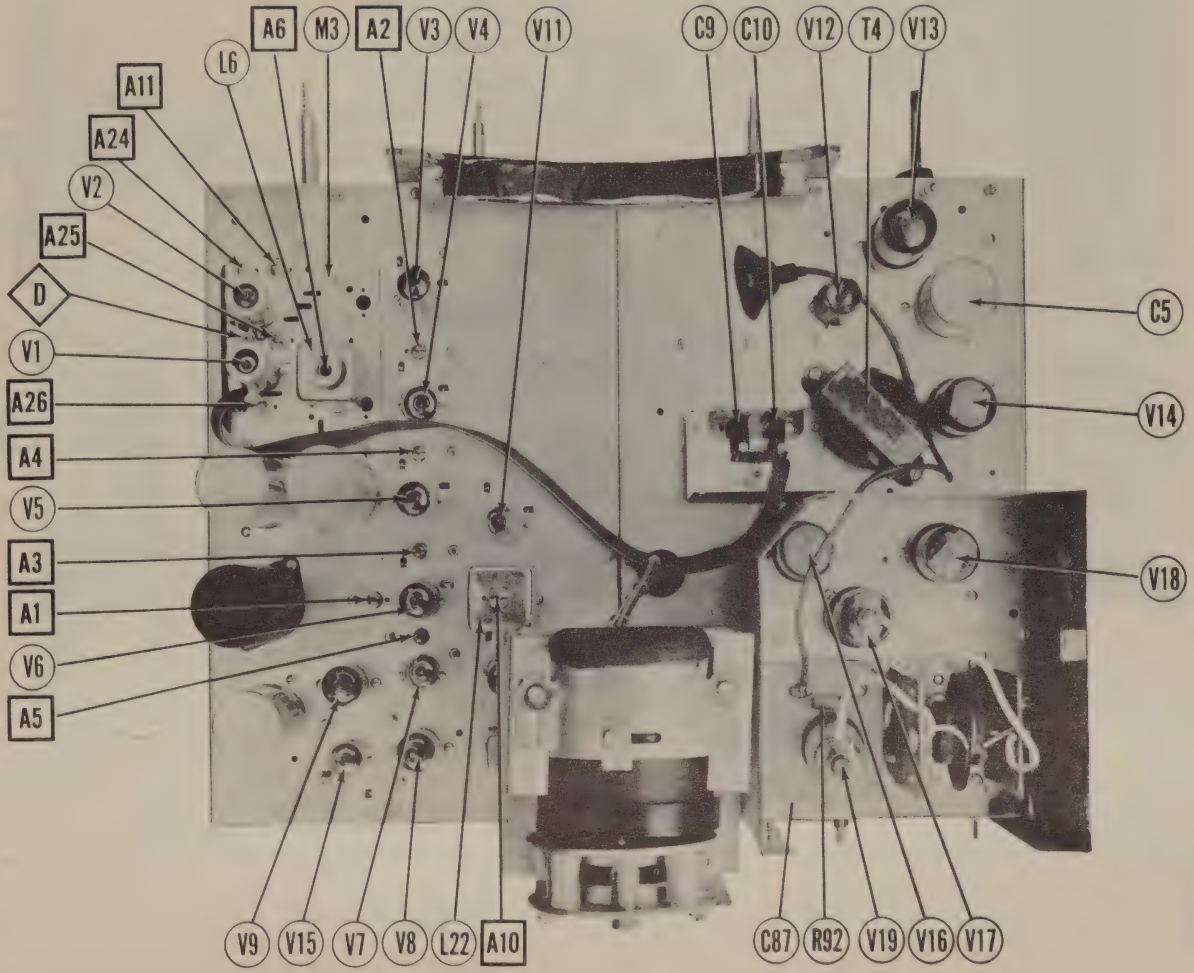


AUTOMATIC
MODELS TV-1249, TV-1250



CHASSIS TOP VIEW

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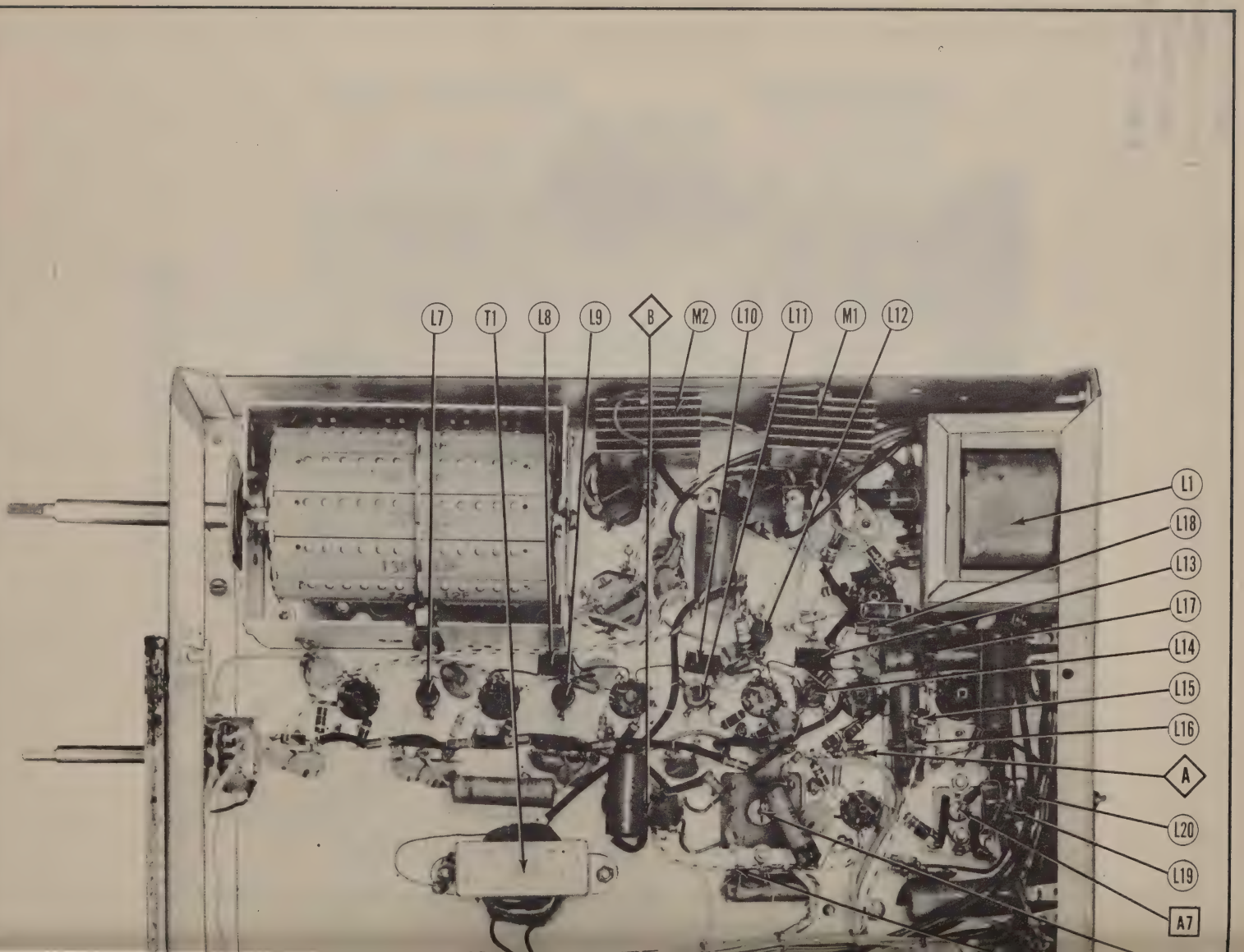
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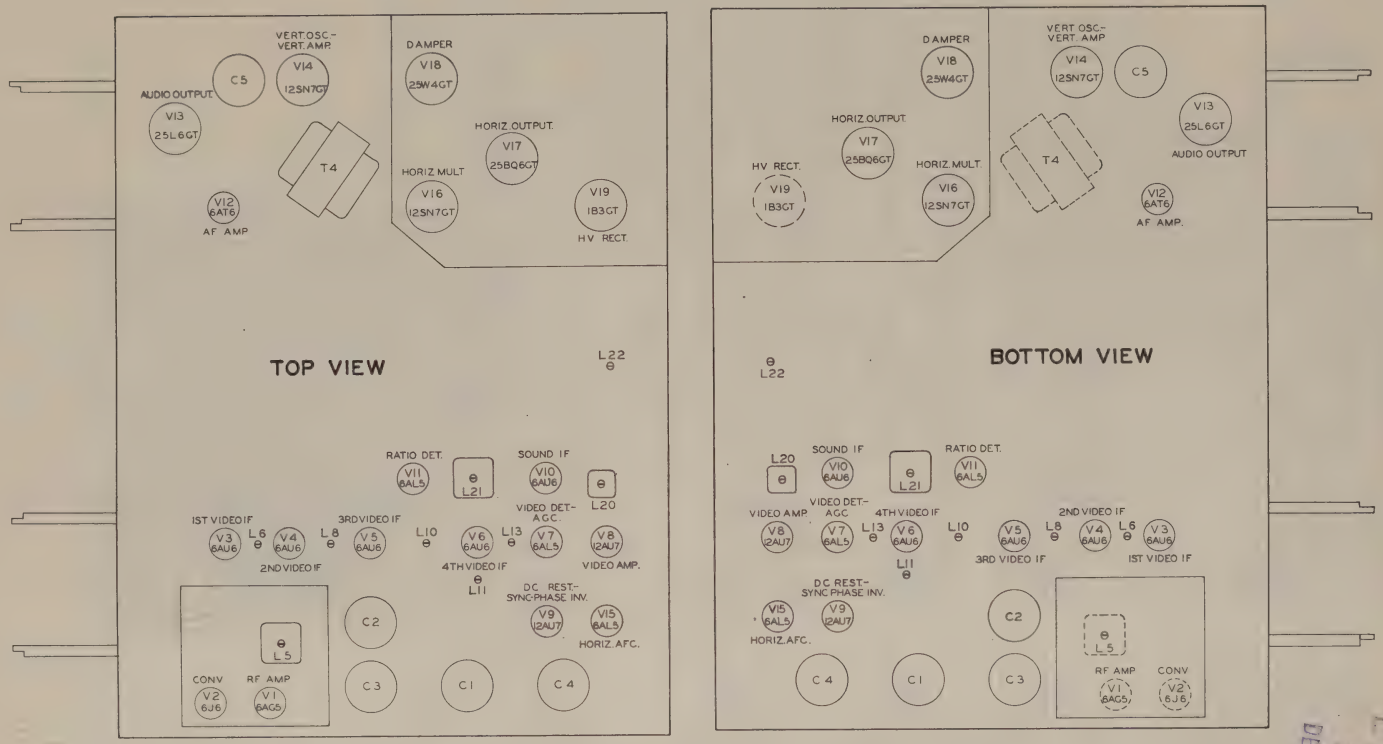

TUBE PLACEMENT CHART

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
If the set is to be aligned with the picture tube removed, the end of the high voltage lead should be securely taped and dressed away from the chassis.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the junction of R24 and C35. Connect the positive lead to chassis.
Remove the converter tube (V2) and replace it with a 6J6 which has had pin 1 removed.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	21.35MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	Direct	"	22.5MC	"	"	A2, A3	Adjust for maximum deflection.
3.	Direct	"	25.5MC	"	"	A4, A5	"
4.	Direct	"	24MC	"	"	A6	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	21.35MC 25.85MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. If necessary retouch A1 thru A6 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to pin 7 (Grid) of 12AU7 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A7, A8 A9	Adjust for maximum deflection.
7.	.01MFD	"	"	"	DC Probe to Point (C). Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to pin 7 (Grid) of 12AU7 (V8). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A7, A8, A9	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per figure 2.
7.	.01MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A10	Reconnect capacitor C6. Adjust A10 so 4.5MC occurs at center of crossover lines as per figure 3. Slightly retouch A9 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using (A-11). It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of (A-11) will not bring all channels within the range of the fine tuning control, it will be necessary to adjust the individual channel oscillator adjustment for each channel that is off frequency. The individual channel oscillator adjustment screws are reached thru a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A12	Adjust to place sound marker in "notch" as shown in figure 4. The video marker should be at 50%.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A13	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A14	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A15	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A16	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A17	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A18	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A19	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A20	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A21	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A22	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A23	

ALIGNMENT INSTRUCTIONS (CONT.)

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RF AND MIXER ALIGNMENT

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point ⓓ. Low side to chassis.	A24, A25, A26	Adjust for response curve similar to figure 5 with markers above 80%.
9.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check all channels for response similar to figure 5. If markers fall below 70% on any channel, make slight adjustment of A24, A25 and A26 with channel switch set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

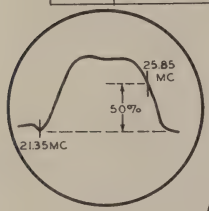


FIG.1

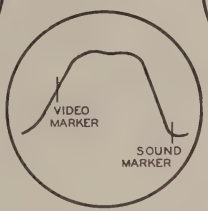


FIG.4

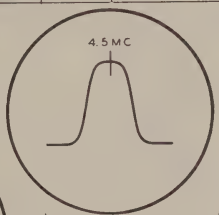


FIG. 2

FIG.5

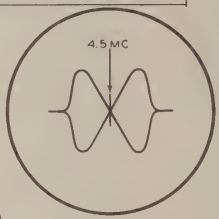
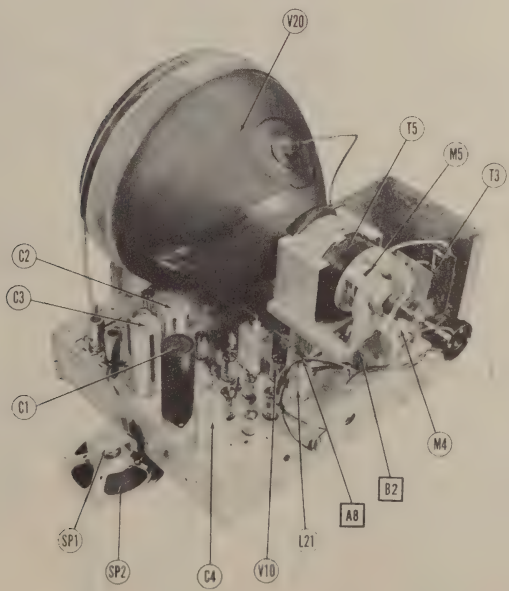


FIG.3



CHASSIS-TOP VIEW

AUTOMATIC
MODELS TV-1249, TV-1250

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-1VDC	0V.	6.3VAC	0V.	130VDC	130VDC	0V.		
V 2	6J6	100VDC	95VDC	6.3VAC	0V.	-2.4VDC	§-4.3VDC	0V.		
V 3	6AU6	-4.4VDC	0V.	49VAC	42VAC	145VDC	120VDC	.2VDC		
V 4	6AU6	-4VDC	0V.	34VAC	42VAC	115VDC	120VDC	.4VDC		
V 5	6AU6	-.3VDC	0V.	34VAC	27VAC	120VDC	125VDC	.4VDC		
V 6	6AU6	0V.	0V.	27VAC	19VAC	120VDC	125VDC	1VDC		
V 7	6AL5	0V.	-1VDC	19VAC	12VAC	0V.	0V.	-.7VDC		
V 8	12AU6	185VDC	0V.	6.2VDC	12VAC	12VAC	175VDC	0V.	2.1VDC	5VAC
V 9	12AU7	100VDC	3.8VDC	21VDC	35VAC	35VAC	3.8VDC	0V.	3.7VDC	43VAC
V 10	6AU6	-.4VDC	0V.	28VAC	20VAC	125VDC	42VDC	0V.		
V 11	6AL5	0V.	0V.	12VAC	20VAC	.3VDC	0V.	-.3VDC		
V 12	6AT6	-.5VDC	0V.	5VAC	12VAC	0V.	0V.	46VDC		
V 13	25L6GT	0V.	85VAC	115VDC	120VDC	1VDC	255VDC	59VAC	12VDC	
V 14	12SN7GT	0V.	380VDC	7.6VDC 21VDC	-5VDC	155VDC 80VDC	0V.	49VAC	59VAC	
V 15	6AL5	0V.	0V.	35VAC	28VAC	7.2VDC	0V.	-6VDC		
V 16	12SN7GT	0V.	310VDC	12VDC	-3VDC	150VDC	12VDC	75.5VAC	65VAC	
V 17	25BQ6GT	0V.	105VAC	0V.	155VDC	-4.8VDC	0V.	75.5VAC	4.5VDC	TOP CAP *
V 18	25W4GT	350VDC	0V.	400VDC	0V.	250VDC	0V.	65VAC	43VAC	
V 19	1B3GT	* DO NOT MEASURE.								
V 20	12LP4	0V.	1.6VDC	PIN 10 390VDC	PIN 11 130VDC	PIN 12 5VAC				

§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	2.8 Meg.	0Ω	.1Ω	0Ω	†4.2KΩ	†4.2KΩ	0Ω		
V 2	6J6	†6.7KΩ	†17KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6AU6	2.7 Meg.	0Ω	25Ω	22Ω	†2.3KΩ	†2.3KΩ	82Ω		
V 4	6AU6	2.7 Meg.	0Ω	20Ω	22Ω	†2.2KΩ	†2.2KΩ	82Ω		
V 5	6AU6	2.7 Meg.	0Ω	20Ω	17Ω	†2.1KΩ	†2.1KΩ	82Ω		
V 6	6AU6	.1Ω	0Ω	17Ω	14Ω	†2KΩ	†2KΩ	82Ω		
V 7	6AL5	.1Ω	470KΩ	14Ω	11Ω	3Ω	0Ω	8.2KΩ		
V 8	12AU7	†10KΩ	1 Meg.	1000Ω	11Ω	11Ω	†5KΩ	1 Meg.	150Ω	8Ω
V 9	12AU7	†6.5KΩ	4 Meg.	3.9KΩ	19Ω	19Ω	4 Meg.	0Ω	270KΩ	21Ω
V 10	6AU6	47KΩ	0Ω	16.5Ω	14Ω	†3KΩ	†24KΩ	0Ω		
V 11	6AL5	Inf.	Inf.	11Ω	14Ω	15KΩ	0Ω	15KΩ		
V 12	6AT6	3.3 Meg.	0Ω	8Ω	11Ω	0Ω	0Ω	†225KΩ		
V 13	25L6GT	0Ω	38Ω	†3KΩ	†2.9KΩ	470KΩ	†26Ω	31Ω	270Ω	
V 14	12SN7GT	2.2 Meg.	#4KΩ	6KΩ 500Ω	1.3 Meg.	#.1.2 Meg. # 3 Meg.	0Ω	25Ω	31Ω	
V 15	6AL5	39KΩ	39KΩ	19Ω	16.5Ω	4.8 Meg.	0Ω	4.8 Meg.		
V 16	12SN7GT	5 Meg.	#14KΩ	1.5KΩ	100KΩ	#128KΩ	1.5KΩ	33Ω	28Ω	
V 17	25BQ6GT	Inf.	37Ω	0Ω	#17KΩ	470KΩ	Inf.	33Ω	43Ω	TOP CAP #80Ω
V 18	25W4GT	#8.2KΩ	Inf.	#0Ω	Inf.	†44Ω	Inf.	28Ω	21Ω	
V 19	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #460Ω
V 20	12LP4	0Ω	740KΩ	PIN 10 #470KΩ	PIN 11 16KΩ	PIN 12 8Ω				

† MEASURED FROM OUTPUT OF M1.
# MEASURED FROM PIN 3 OF V18.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

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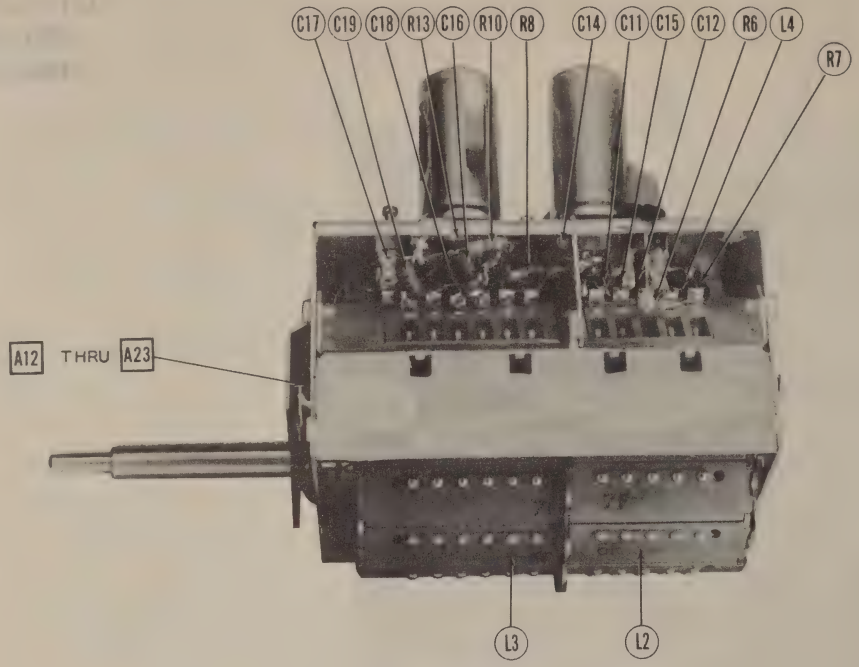
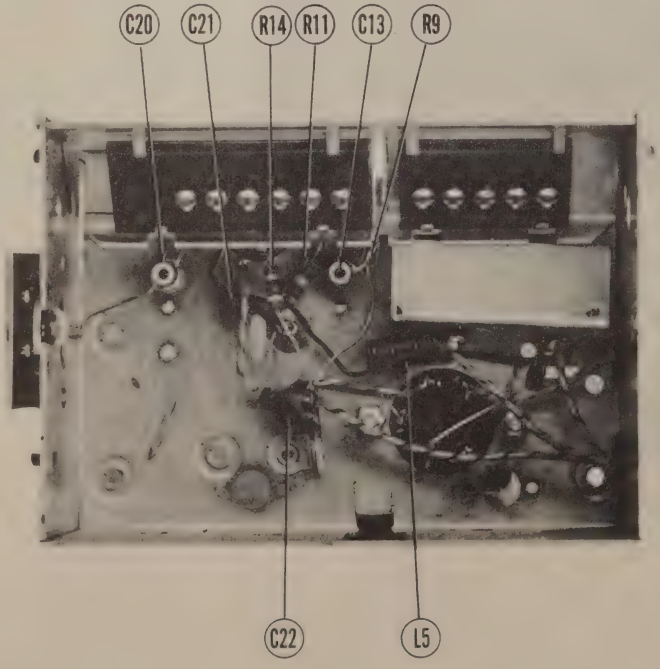
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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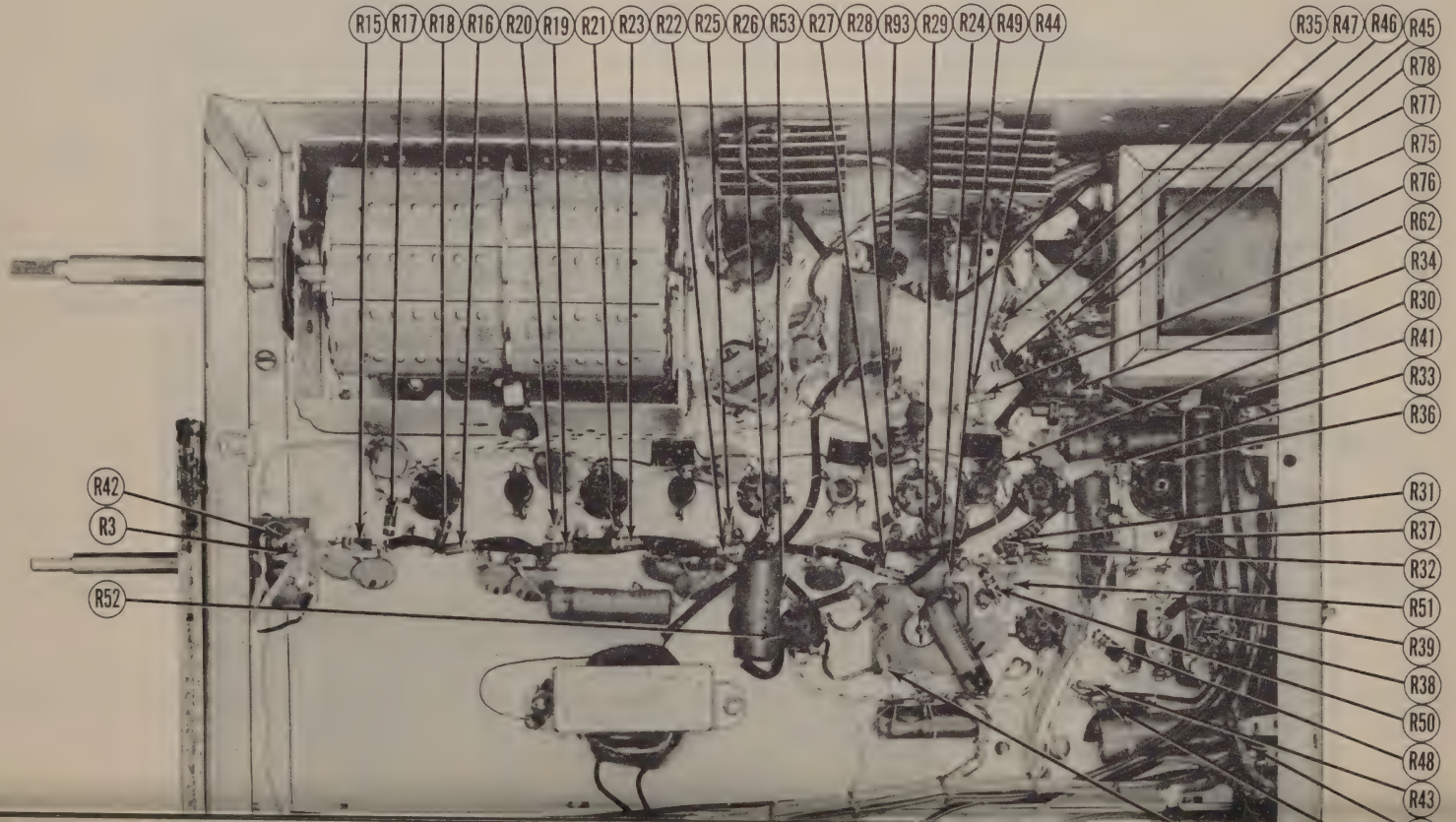
CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION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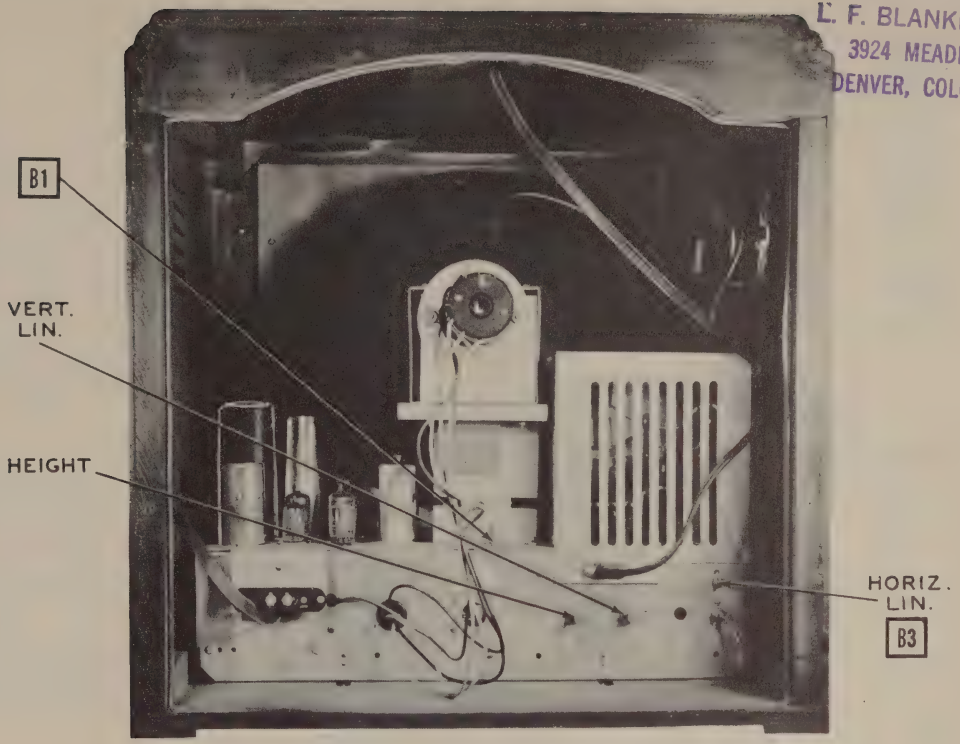


CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) to the center of the range over which the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right half of the picture.

Adjust the horizontal linearity slug (B3) until the picture is symmetrical from left to right.

Readjustment of B2 may be necessary for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove seven push-on type control knobs from front of set.
2. Remove four phillips head screws holding rear cover. Remove cover.
3. Disconnect built-in antenna at chassis terminal.
4. Remove speaker plug from rear of chassis.
5. Remove four large screws holding chassis at bottom. Remove chassis.
6. Remove two wing nuts holding speaker. Remove speaker.

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.		6AG5	7BD	
V2	Converter		6J6	7BF	
V3	1st Video IF		6AU6	7BK	
V4	2nd Video IF		6AU6	7BK	
V5	3rd Video IF		6AU6	7BK	
V6	4th Video IF		6AU6	7BK	
V7	Video Det. -AGC		6AL5	6BT	
V8	Video Amp.		12AU7	9A	
V9	DC Rest. -Sync. Phase Inv.		12AU7	9A	
V10	Sound IF Amp.		6AU6	7BK	
V11	Ratio Det.		6AL5	6BT	
V12	AF Amp.		6AT6	7BT	
V13A	Audio Output		25L6GT	7AC	
B	Audio Output		25L6	7AC	
V14	Vert. Osc. -Vert. Amp.		12SN7GT	8BD	
V15	Hor. AFC		6AL5	6BT	
V16	Hor. Mult.		12SN7GT	8BD	
V17	Hor. Output		25BQ6GT	6AM	
V18	Damper		25W4GT	4CG	
V19	HV Rect.		1B3GT	3C	
V20	Picture Tube		12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	150	250		AF3030F				TVL-210	▲ Voltage Doubler Cap.
B	150	250							▲ Voltage Doubler Cap.
C2A	60	400		AFH128J		UP8445		TVL-208	▲ Filter
B	60	400							▲ Filter
C3A	60	400		AFH128J		UP8445		TVL-208	▲ Filter
B	60	400							▲ Filter
C4A	40	350		AFH882J		UP9CJ897		TVL-30	▲ Decoupling
B	40	350							■ Decoupling
C	10	350							▲ Low Pass Filter
C5A	30	450		AFH63J		UP7BJ912		TVL-416	▲ Decoupling
B	15	450							▲ Decoupling
C6	4	25		PRS150/4		BR550		TVA-13	Stabilizing Cap.
C7	50	25		PRS25/50		BR502A		TVA-7	Output Cath. Byp.
C8	100	25		PRS25/100		BRH251A		TVA-8	Vert. Output Cath. Byp.
C9	500	500		1468-0005	D6-501		GP2K-500	1FM-35	Ant. Coupling
C10	500	500		1468-0005	D6-501		GP2K-500	1FM-35	Ant. Coupling
C11	4.5			SI4.5DNPO	D2-4.7		NPOK-4.7		Fixed Trimmer
C12	.5-3				829-3				Variable Trimmer
C13	.5-3				829-3				Variable Trimmer
C14	120			GP120K	D6-121		GP2K-120		RF Decoupling
C15	1000			GP1000M	D6-102		GP2L-001		RF Fil. Byp.
C16	100			SI100KN750	DN-100		GP1K-100		RF Coupling
C17	.5-3				829-3				Variable Trimmer
C18	20			SI20KNPO	D2-20		NPOK-20		Osc. Grid Cap.
C19	10			SI10DN750	DN-10		N750K-10		Fixed Trimmer
C20	.5-3				829-3				Variable Trimmer
C21	1000			GP1000M	D6-102		GP2L-001		Osc. Fil. Byp.
C22	1000			GP1000M	D6-102		GP2L-001		RF Bypass
C23	5000			BPD-5	D6-502	1D5D5	811-005	29C1	AGC Filter
C24	5000			BPD-5	D6-502	1D5D5	811-005	29C1	AGC Filter *
C25	5000			BPD-5	D6-502	1D5D5	811-005	29C1	AGC Filter
C26	5000			BPD-5	D6-502	1D5D5	811-005	29C1	1st V. IF Decoup.
C27	5000			BPD-5	D6-502	1D5D5	811-005	29C1	1st V. IF Fil. Byp.
C28	270			GP270M	D6-271	5W5T25	GP2K-270	1FM-325	IF Coupling
C29	5000			BPD-5	D6-502	1D5D5	811-005	29C1	AGC Filter
C30	5000			BPD-5	D6-502	1D5D5	811-005	29C1	2nd V. IF Decoup.
C31	5000			BPD-5	D6-502	1D5D5	811-005	29C1	2nd V. IF Fil. Byp. *
C32	5000			BPD-5	D6-502	1D5D5	811-005	29C1	2nd V. IF Fil. Byp.
C33	270			GP270M	D6-271	5W5T25	GP2K-270	1FM-325	IF Coupling
C34	5000			BPD-5	D6-502	1D5D5	811-005	29C1	AGC Filter
C35	.05	400		P488-05		PTE4S5		TM-15	AGC Filter
C36	5000			BPD-5	D6-502	1D5D5	811-005	29C1	3rd V. IF Decoup.
C37	5000			BPD-5	D6-502	1D5D5	811-005	29C1	3rd V. IF Fil. Byp.
C38	1.2			SI1.2CNPO	D2-1.5		NPOK-1.5		IF Coupling
C39	39			GP39M	D6-390	5W5Q4	GP1K-39	1FM-44	Fixed Trimmer
C40	5000			BPD-5	D6-502	1D5D5	811-005	29C1	4th V. IF Decoup.
C41	5000			BPD-5	D6-502	1D5D5	811-005	29C1	4th V. IF Cath. Byp.
C42	5000			BPD-5	D6-502	1D5D5	811-005	29C1	4th V. IF Fil. Byp.
C43	100			GP100M	D6-101	5W5T1	GP1K-100	1FM-31	IF Coupling
C44	5000			BPD-5	D6-502	1D5D5	811-005	29C1	DAGC Decoup.
C45	4.7			GP5K	D2-4.7	5W5V5	NPOK-4.7	MS-55	V. Diode Filter
C46	.05	400		P488-05		PTE4S5		TM-15	Video Coupling
C47	500			GP500M	D6-501	5W5T5	GP2K-500	1FM-35	V. Amp. Cath. Byp.
C48	.05	400		P488-05		PTE4S5		TM-15	Video Coupling
C49	.05	400		P488-05		PTE4S5		TM-15	Video Coupling
C50	.1	400		P488-1		PTE4P1		TM-1	Video Coupling
C51	.1	400		P488-1		PTE4P1		TM-1	Pic. Tube Cath. Byp.
C52	39			GP39M	D6-390	5W5Q4	GP1K-39	1FM-44	S. IF Coupling
C53	5000			BPD-5	D6-502	1D5D5	811-005	29C1	S. IF Screen Bypass
C54	.02	400		P488-02		PTE4S2		TM-12	S. IF Plate Decoup.
C55	330			GP330M	D6-331	5W5T3	GP2K-330	1FM-335	Diode Load Cap.
C56	5000			BPD-5	D6-502	1D5D5	811-005	29C1	RF Bypass
C57	1500			GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	De-emphasis
C58	.02	400		P488-02		PTE4S2		TM-12	Audio Coupling
C59	5000			BPD-5	D6-502	1D5D5	811-005	29C1	Vol. Control Byp. *
C60	.002	400		P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Audio Coupling
C61	100			GP100M	D6-101	5W5T1	GP1K-100	1FM-31	AF Amp. Plate Byp. *
C62	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	Audio Coupling
C63	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	Output Plate Bypass
C64	2000	500		1467-002	D6-202	PTE6D2	GP2M-002	1FM-22	Integrator Net.

CAPACITO

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMEN: CENTRALA PART No.
C65	5000			BPD-5	D6-502
C66	5000			BPD-5	D6-502
C67	5000	300		1467-005	D6-502
C68	.1	600		P688-1	
C69	.25	400		P488-25	
C70	1000			GP1000M	D6-102
C71	1000			GP1000M	D6-102
C72	5000			BPD-5	D6-502
C73	.1	400		P488-1	
C74	.0047	600		P688-0047	D6-472
C75	.05	600		P688-05	
C76	4000	300		1464-004	
C77	250	500		1468-00025	D6-251
C78	500	500		1468-0005	D6-501
C79	250	500		1468-00025	D6-251
C80	.05	600		P688-05	
C81	1.0	100		430-1.0	
C82	1000	500		1467-001	D6-102
C83	.05	600		P688-05	
C84	.1	600		P688-1	
C85	.05	600		P688-05	
C86	.5	400		484-5	
C87	500	15000			TV3-502
C88	.05	600		P688-05	
C89	5000			BPD-5	D6-502

* Not used in all models.
† Some models use .05MFD in this application.
‡ Some models use .1MFD in this application.

CONT

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROST N
R1A	500KΩ	½	TRV-75	Q13-133	M-60-Z
B	Switch		Not Req.	76-1	SW-A
R2A	500KΩ	½		Concentrikit B11-133 *	
B	50KΩ	½	TRV-95	B11-133 *	
C	Shaft End	½		E-202 *	
R3A	1000Ω	½		Concentrikit B11-108 *	
B	25KΩ	½	TRV-76	B11-120 *	
C	Shaft End	½		E-202 *	
R4	2 Meg.	½	TRV-90	Q11-139	M-83-S
R5	5000Ω	½	TRV-91	Q11-114	M-19-S

* Additional parts to be used with "Concentrikit".

RESIS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: IRC PART No.
R6	3900Ω	½		BTS-3900
R7	47KΩ 20%	½		BTS-47K
R8	10KΩ	½		BTS-10K
R9	2200Ω 20%	½		BTS-2200
R10	4700Ω	½		BTS-4700
R11	220KΩ 20%	½		BTS-220K
R12	15KΩ 20%	½		BTS-15K
R13	10KΩ	½		BTS-10K
R14	4700Ω	½		BTS-4700
R15	330Ω 20%	½		
R16	330Ω 20%	½		
R17	6800Ω	½		
R18	82Ω	½		
R19	150Ω 20%	½		
R20	22KΩ	½		BTS-22K
R21	82Ω	½		
R22	150Ω 20%	½		
R23	330Ω 20%	½		
R24	2.2 Meg. 20%	½		BTS-2.2 Meg.
R25	22KΩ	½		BTS-22K
R26	82Ω	½		
R27	150Ω 20%	½		
R28	8200Ω	½		
R29	82Ω	½		
R30	470KΩ 20%	½		BTS-470K
R31	100KΩ	½		BTS-100K
R32	8200Ω	½		BTS-8200
R33	1 Meg. 20%	½		BTS-1 Meg.
R34	3300Ω	1		BTA-3300
R35	5600Ω	2		BT-2-5600
R36	1 Meg. 20%	½		BTS-1 Meg.
R37	150Ω 20%	½		
R38	3600Ω 20%	½		
R39	4700Ω	1		BTA-4700
R40	2200Ω 20%	½		BTS-2200
R41	470KΩ 20%	½		BTS-470K
R42	10KΩ 20%	½		BTS-10K
R43	270KΩ 20%	½		BTS-270K
R44	100KΩ 20%	½		BTS-100K
R45	3.3 Meg. 20%	½		BTS-3.3 Meg.
R46	3900Ω	½		BTS-3900
R47	4700Ω	½		BTS-4700
R48	47KΩ 20%	½		
R49	1000Ω 20%	½		BTS-1000
R50	47KΩ 20%	½		

TIONS (Continued)

(CONT.)

TA RNELL- 'BILIER RT No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
E6D5	811-005	1FM-25	Integrator Net.
E6D5	811-005	1FM-25	Integrator Net.
D5	811-005	1FM-25	Vert. Osc. Grid Cap.
E6P1		TM-1	Vert. Discharge
4P25		TC-2	Vert. Sweep Coup.
5D1	GP2L-001	1FM-21	Hor. Sync. Coup.
5D1	GP2L-001	1FM-21	Hor. Sync. Coup.
D5	811-005	29C1	AFC Filter
64P1		TM-1	AFC Filter
E6D5	GP2M-0047	TM-25	Hor. Feedback †
'E6S5		TM-15	Voltage Divider *
R5D4	GP2M-004	MS-24	Fixed Trimmer
'5T25	GP2K-250	1FM-325	Hor. MV Feedback
'5T5	GP2K-500	1FM-35	Hor. Discharge
'5T25	GP2K-250	1FM-325	Hor. Sweep Coupling
'E6S5		TM-15	Hor. Output Screen Byp
2W1		BP-10	Hor. Output Cath. Byp.
5D1	GP2L-001	1FM-21	Hor. Discharge *
'E6S5		TM-15	Damper Filter †
E6P1		TM-1	Damper Filter
E6S5		TM-15	Acc. Anode Bypass
4P5		TC-5	Hor. Sweep Coupling HV Filter
'E6S5		TM-15	Line Filter
D5	811-005	29C1	RF Bypass *

S

CENTRALAB PART No.	INSTALLATION NOTES
1-60-S	Volume control
lot Req.	Attach to RIA per instructions
	Vert. hold control-front
	Horiz. hold control-rear
	Attach per instructions in "Concentrikit"
	Contrast control-front
	Brightness control-rear
	Attach per instructions in "Concentrikit".
-75	Height control
-10	Vert. linearity control

S

IDENTIFICATION CODES

ESISTORS ARE ± 10% UNLESS OTHERWISE STATED.

Coil Shunt
Network
late Coil Shunt
ecoupling
. Grid
. Grid
. Plate-See Note 10
Grid
Plate
Network
Network
deo IF Grid-See Note 1
deo IF Cathode
upling
ideo IF Grid
ideo IF Cathode
upling
Network
Network
ideo IF Grid
ideo IF Cathode
upling
deo IF Transformer Shunt
deo IF Cathode
Rect. Diode Load
ed AGC Network
Det. Diode Load-See Note 2
Amp. Grid-See Note 3
Amp. Plate
ass Filter
Amp. Grid-See Note 3
Amp. Cathode
g Coil Shunt-See Note 4
Amp. Plate
Correction
e Tube Grid
e Divider
st. Load
e Divider
e Divider
Phase Inv. Cathode
Phase Inv. Plate
IF Grid
IF Plate Decoupling
IF Screen

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AUTOMATIC PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R51	27KΩ 20%	½		BTS-27K	Voltage Divider
R52	15KΩ 20%	½		BTS-15K	Ratio Det. Diode Load
R53	15KΩ 20%	½		BTS-15K	Ratio Det. Diode Load
R54	47KΩ 20%	½		BTS-47K	De-emphasis
R55	3.3 Meg. 20%	½		BTS-3.3 Meg.	AF Amp. Grid-See Note 5
R56	220KΩ	1		BTA-220K	AF Amp. Plate-See Note 6
R57	250Ω 20%	½			AF Amp. Plate-See Note 4
R58	470KΩ 20%	½		BTS-470K	Output Grid
R59	270Ω 20%	1		BW-1-270	Output Cathode
R60	2200Ω	10		AB-2250	Filter-Wire Wound
R61	1900Ω	10			Filter-Wire Wound
R62	27KΩ 20%	½		BTS-27K	Integrator Network
R63	8200Ω	½		BTS-8200	Integrator Network
R64	8200Ω	½		BTS-8200	Integrator Network
R65	1.2 Meg. 20%	½		BTS-1.2 Meg.	Vert. Osc. Grid-See Note 7
R66	150KΩ 5%	½		BTS-150K-5%	Vert. Osc. Grid-See Note 4
R67	220KΩ	1		BTA-220K	Vert. Osc. Grid-See Note 4
R68	1.2 Meg. 20%	½		BTS-1.2 Meg.	Vert. Osc. Plate
R69	6.8 Meg. 20%	½		BTS-6.8 Meg.	Voltage Divider
R70	100KΩ	½		BTS-100K	Voltage Divider
R71	3300Ω	½		BTS-3300	Vert. Peaking
R72	2.2 Meg. 20%	½		BTS-2.2 Meg.	Vert. Amp. Grid
R73	470Ω 20%	½		BTS-470	Vert. Amp. Cathode
R74	2700Ω	½		BTS-2700	Vert. Amp. Decoupling
R75	100KΩ 20%	½		BTS-100K	Horiz. AFC Det. Load
R76	100KΩ 20%	½		BTS-100K	Horiz. AFC Det. Load
R77	4.7 Meg. 20%	½		BTS-4.7 Meg.	Horiz. AFC Det. Load
R78	470KΩ 20%	½		BTS-470K	Horiz. AFC Filter Network
R79	39KΩ 20%	½		BTS-39K	Feedback Network-See Note 8
R80	4700Ω	½		BTS-4700	Feedback Network-See Note 4
R81	1500Ω	½		BTS-1500	Horiz. Osc. Cathode
R82	5600Ω	½		BTS-5600	Horiz. Osc. Plate
R83	100KΩ	½		BTS-100K	Horiz. Osc. Grid
R84	20KΩ	½			Horiz. Peaking-See Note 4
R85	120KΩ	½		BTS-120K	Horiz. Osc. Plate
R86	330Ω 20%	½			Parasitic Supp.
R87	470KΩ 20%	½		BTS-470K	Horiz. Output Grid
R88	43Ω	1			Horiz. Output Cathode
R89	18KΩ	4			Horiz. Output Screen-See Note 9
R90	8200Ω 5%	2		BT-2-8200-5%	Filter
R91	470KΩ	½		BTS-470K	Acc. Anode Load
R92	470KΩ 20%	1			HV Filter
R93	5Ω	5			Surge Limiter -Wire Wound
R94A	90Ω	20			Filament Dropping-Wire Wound
B	30Ω	20			Filament Dropping-Wire Wound

Note 1. Some models use 3900Ω resistor in this application.
Note 2. Some models use 4700Ω resistor in this application.
Note 3. Some models use 1.2 Meg resistor in this application.
Note 4. Not used in all models.
Note 5. Some models use 10 Meg. resistor in this application.
Note 6. Some models use 390KΩ resistor in this application.
Note 7. Some models use 1 Meg. resistor in this application.
Note 8. Some models use 47KΩ resistor in this application.
Note 9. Some models use two resistors in parallel, to obtain required resistance and wattage.
Note 10. Part of L6, 1st Video IF

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② .05A	6.3VAC ② .75A			NE-734-F	P-6134	P-2944 ③	F-633

③ Drill new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	190Ω	1100Ω	LA-449	A-8111①	A-3000 ①	TBO-1 ②	Vert. Block Osc. Trans.
T3	415Ω Tap ② 54Ω	24.5Ω Tap ② 12.5Ω, 18Ω	GE-77J1		HVO-6		Hor. Output Transformer
		SEC. 2 0Ω					
T4	1300Ω	10Ω	NE-664-6	A-8113	A-3036	TSO-5 ①	Vert. Output Trans.
T5A	14Ω		DY-12	DY-1	MD-12		Hor. Deflection Coil
B	65Ω						Vert. Deflection Coil

① Drill one new mounting hole.
② File hole in chassis to fit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	1.6KΩ	3.7Ω	120Ω	.4Ω		A-3876	A-2928	RO-2	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AUTOMATIC PART No.	JENSEN PART No.	QUAM PART No.	
SP1	PM	3.7Ω		ST-105 MOD. P5-X	5A07	
	CONE DIA.	V. C. DIA.				
SP2	4 3/8"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.250A	26.5Ω	1.2 Henry	NE-685	C-2326	C-2991	TR-3300①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AUTOMATIC PART No.	MEISSNER PART No.	
L2	Ant. Coil	0Ω				
L3	RF, Mixer, & Osc.	0Ω				
L4	Fil. Choke	0Ω				
L5	Fil. Choke	0Ω				
L6	1st Video IF			31A 054		Includes 10MMF, 120MMF capacitors and R12
L7	2nd Video IF	.1Ω				
L8	Fil. Choke	0Ω				
L9	3rd Video IF	.1Ω				
L10	Fil. Choke	0Ω				
L11	4th Video IF	.1Ω	.1Ω			
L12	21.35MC Trap	0Ω				
L13	Fil. Choke	0Ω				
L14	5th Video IF	.1Ω	.1Ω			
L15	Peaking	5.9Ω			19-1921 †	160Microhenries, wound on 15KΩ resistor
L16	Peaking	19Ω				700 microhenries
L17	Peaking	8Ω			19-1921 ‡	160 microhenries, wound on 10KΩ resistor
L18	Peaking	12Ω			19-1922	290 microhenries
L19	Peaking	9Ω			19-1922 †	205 microhenries, wound on 15KΩ resistor
L20	Peaking	10Ω			19-1922	235 microhenries
L21	Sound IF	1.8Ω	1.8Ω			
L22	Ratio Det. Trans.	6.8Ω	.8Ω			
L23	Ringing	90Ω				
L24	Horiz. Lin.	35Ω				

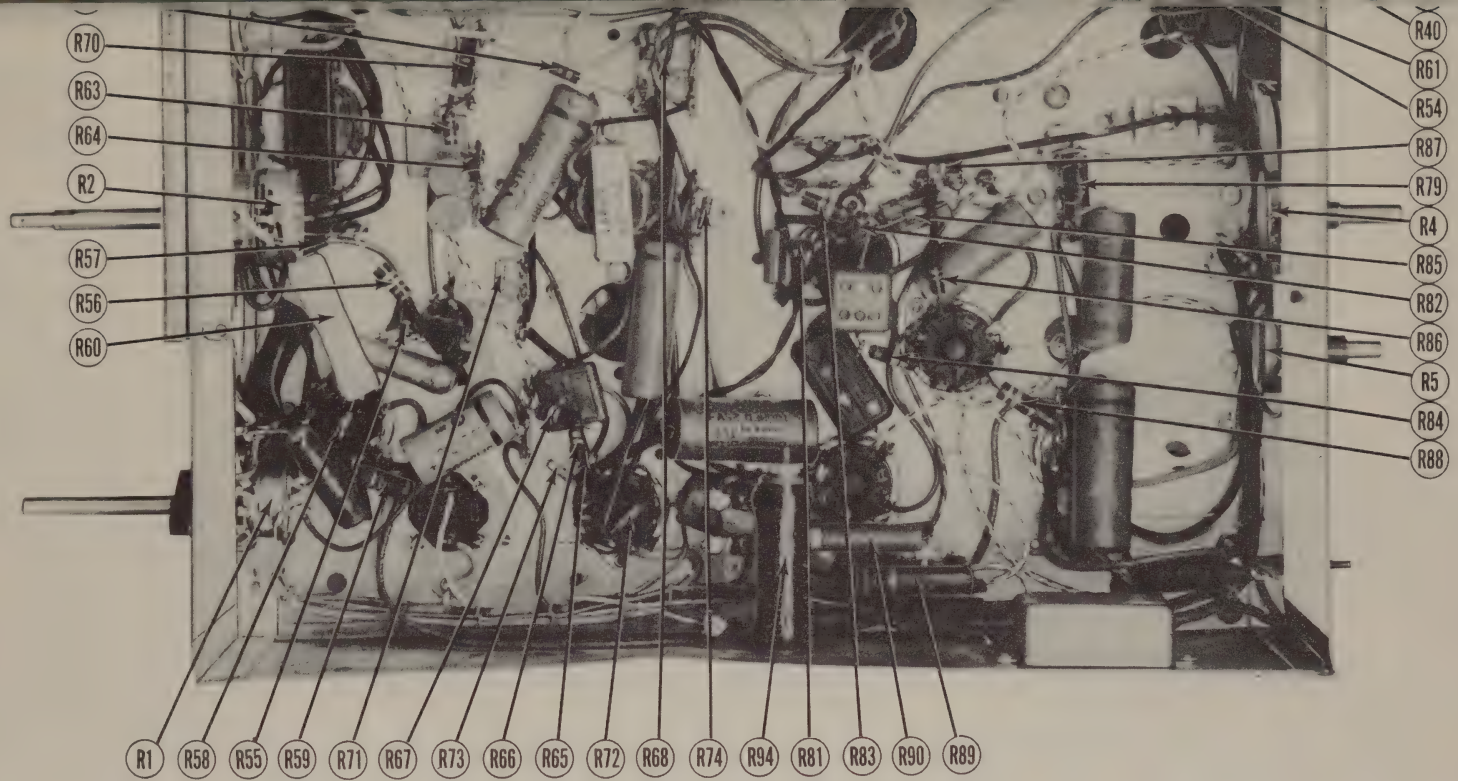
† Add 15KΩ resistor in parallel.
‡ Add 10KΩ resistor in parallel.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	AUTOMATIC PART No.	SYLVANIA PART No.		
M1	.250A		NF-5		
M2	.250A		NF-5		

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	RF Tuner		
M4	Ion Trap		
M5	Focus Magnet Assembly		
	Trimmer		25-250MMF Horiz. Drive



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
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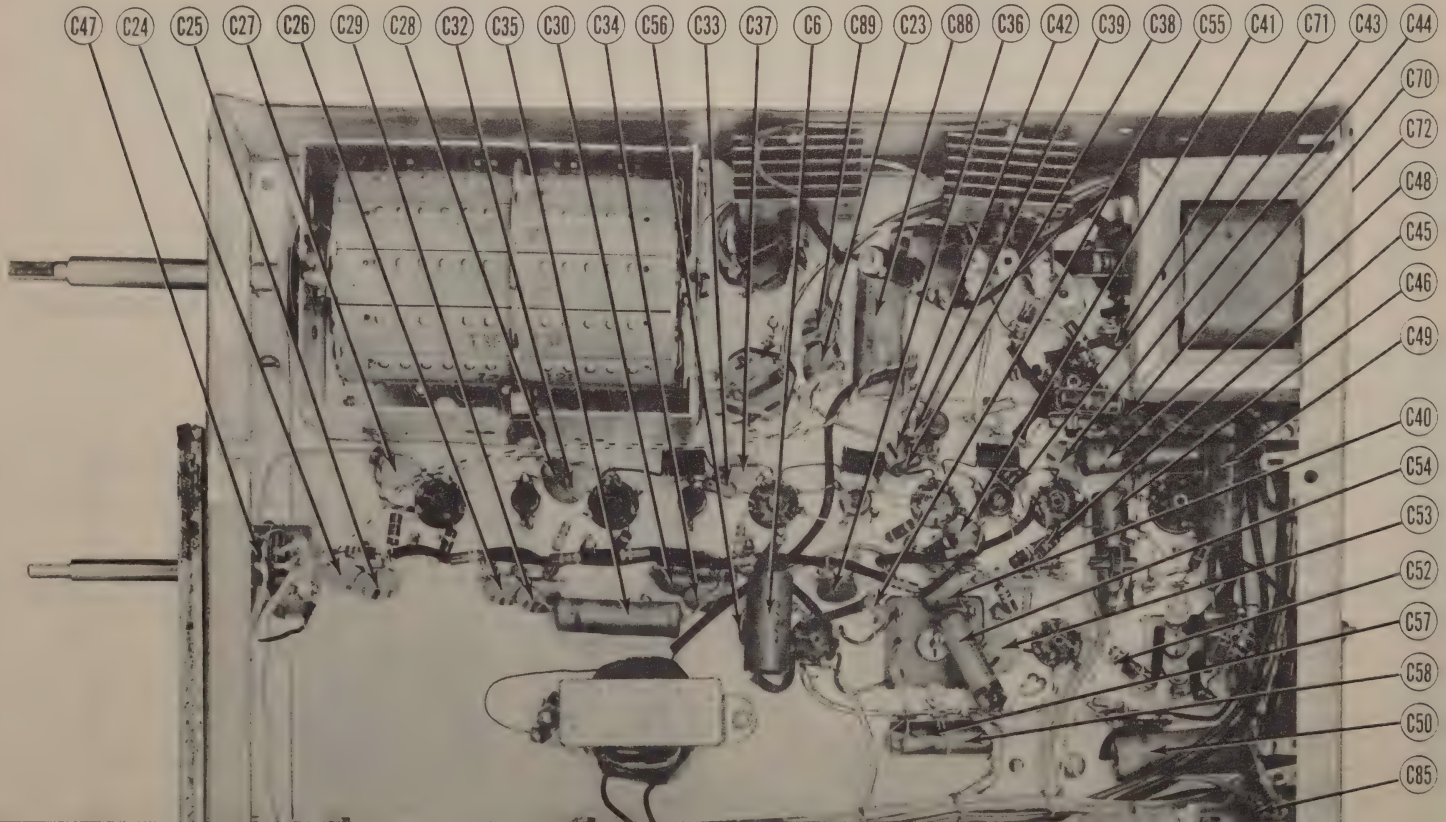
3924 MEADE ST.
DENVER, COLORADO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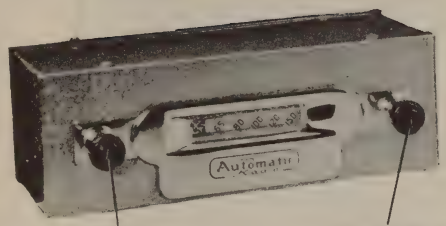

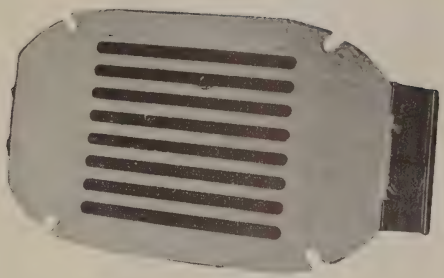

TUNING CONTROL

VOLUME CONTROL
ON-OFF SWITCH

AUTOMATIC
MODEL F-100

AUTOMATIC MODEL F-100

TRADE NAME	Automatic, Model F-100
MANUFACTURER	Automatic Radio Mfg. Co. Inc., 122 Brookline Ave., Boston, Mass.
TYPE SET	Battery Operated Custom Built Automotive Superheterodyne Receiver
TUBES (SIX)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AT6 DET-AVC-AF, 6AQ5 Power Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.1 Amp. at 6 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set right hand edge of pointer carriage 2 31/32" from edge of chassis at the low frequency end of dial.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 6BE6 (V2). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	100MMF	High side to pin 1 (Grid) of 6BA6 (V1). Low side to chassis.	1600KC	"	"	A5	"
3.	100MMF	High side to antenna lead. Low side to chassis.	1400KC	Tune for max. output.	"	A6	"
4.	100MMF	"	"	"	"	A7	"
5.	100MMF	"	600KC	"	"	A8	"
6.	100MMF	"	600KC	"	"	A9, A10	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AUTOMATIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amp.	6BA6	6BA6	7BK	
V4	DET.-AVC-AF	6AT6	6AT6	7BT	
V5	Power Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AUTOMATIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350	CE-86	AF64H4A		UP2235C		EL-323	■ Filter
B	20	350							▲ Filter
C	20	25							Output Cath.
C2	.05	200		P285-05		PTE4S5		68P16	AVC Filter
C3	.05	200		P285-05		PTE4S5		68P16	AVC Filter
C4	.05	200		P285-05		PTE4S5		68P16	Decoupling
C5	100			GP100M	D6-101	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C6	.1	400		P488-1		PTE4P1		TM-1	RF Bypass
C7	.05	200		P285-05		PTE4S5		68P16	Decoupling *
C8	200			GP200M	D6-201	5W5T2	GP2K-200	1FM-32	Diode RF Filter
C9	.006	400		P488-006	D6-562	PTE6D6	811-005	TM-26	Audio Coupling
C10	200			GP200M	D6-201	5W5T2	GP2K-200	1FM-32	AF Amp. Plate
C11	.01	600		P688-01	D6-103	PTE6S1	811-01	TM-11	Audio Coupling
C12	.5	100		P288-5				68P20	Hash Filter
C13	.02	600		P688-02		PTE6S2		TM-12	Output Plate
C14	.008	1600		P1688-0075		PTE16D8		MB-28	Buffer
C15	.5	100		P288-5				68P20	Hash Filter

* Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750KΩ	½	RV-100	Q13-137	AG-79-Z	B-70-S	Volume control and switch
B	Shaft		Not Req.	Not Req.	FS-3		Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB		Attach to R1A per instructions

RESISTORS

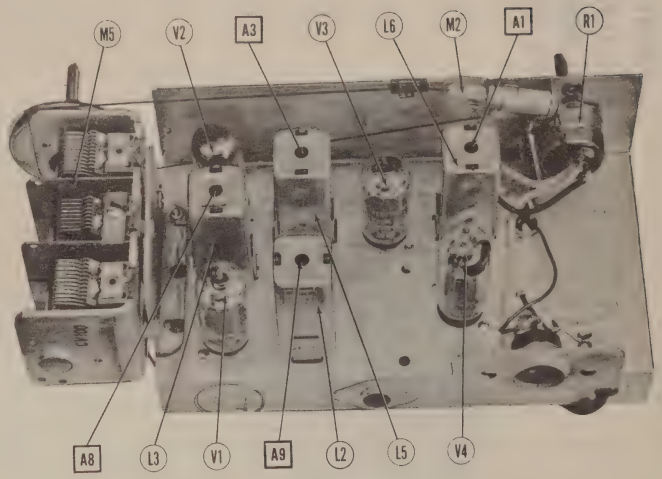
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AUTOMATIC PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1 Meg.	½		BTS-1 Meg.	AVC Network
R3	20KΩ	½		BTS-22K	Osc. Grid
R4	1500Ω	½		BTS-1500	IF Amp. Cathode
R5	20KΩ	2		BT-2-22K	Screen Dropping
R6	2 Meg.	½		BTS-2 Meg.	AVC Network
R7	10 Meg.	½		BTS-10 Meg.	AF Amp. Grid
R8	240KΩ	½		BTS-220K	AF Amp. Plate-See Note 1
R9	500KΩ	½		BTS-470K	Output Grid
R10	330Ω	½		BW-½-330	Output Cathode
R11	1000Ω	1		BTA-1000	Filter
R12	100Ω	½		BW-½-100	Hash Suppression
R13	100Ω	½		BW-½-100	Hash Suppression
R14	300Ω	½		BW-½-330	RF Amp. Cathode-See Note 2

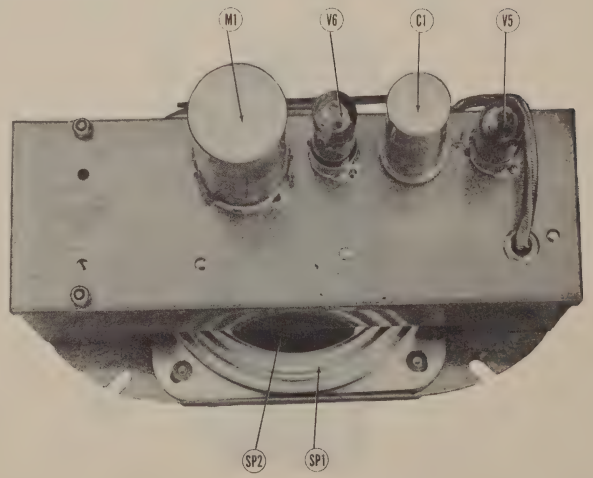
Note 1. Some models use a 250KΩ resistor in this application.
Note 2. Not used in all models.

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AUTOMATIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6VDC @ 3A	425VCT .038ADC			TV-100		P-2970	

CHASSIS—TOP VIEW





PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AUTOMATIC	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T2	4800Ω	3.4Ω	400Ω	.7Ω	Part of SP1	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			AUTOMATIC	VIKING	QUAM	
			PART No.	PART No.	PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.4Ω	PM-705	525J4	52A21 ①	① Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	5"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
				AUTOMATIC	MEISSNER	
		PRI.	SEC.	PART No.	PART No.	
L1	Ant. Loading	2Ω		L200		Includes capacitor used as coil form
L2	Ant. Coil	14.5Ω	5Ω	57FB-3		
L3	RF Coil	90Ω	7.5Ω	57FB-4		
L4	Osc. Coil	10Ω			14-1073	Tap at 1.2Ω
L5	1st IF	21Ω	21Ω	1655-16	16-6758	
L6	2nd IF	21Ω	21Ω	1655-16	16-6758	
L7	Fil. Choke	0Ω		L203		
L8	Fil. Choke	.2Ω		L202		

VIBRATOR

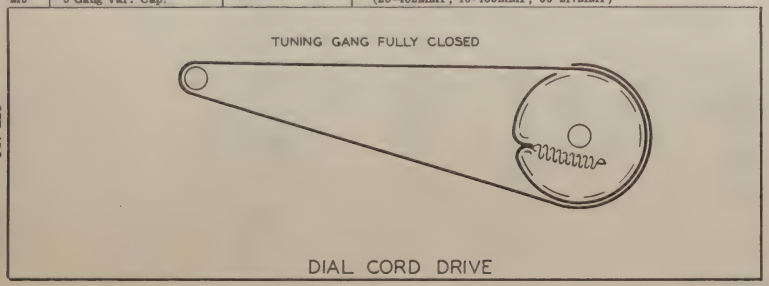
ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				INSTALLATION NOTES
				AUTOMATIC	AEROVOX	CORNELL-DUBILIER	RADIART	
				PART No.	PART No.	PART No.	PART No.	
M1	Int.	6VDC	115∿	V-83	A-100	C-01	5301	

DIAL LIGHTS

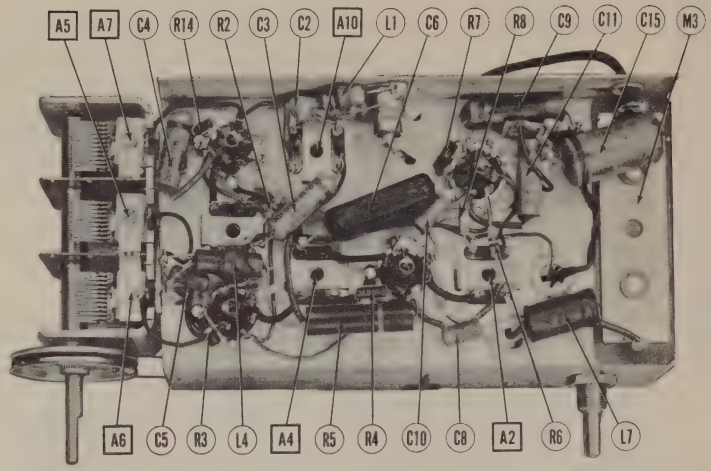
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AUTOMATIC		
					PART No.		
M2	Bayonet	6-8	.15	Brown			Type #47

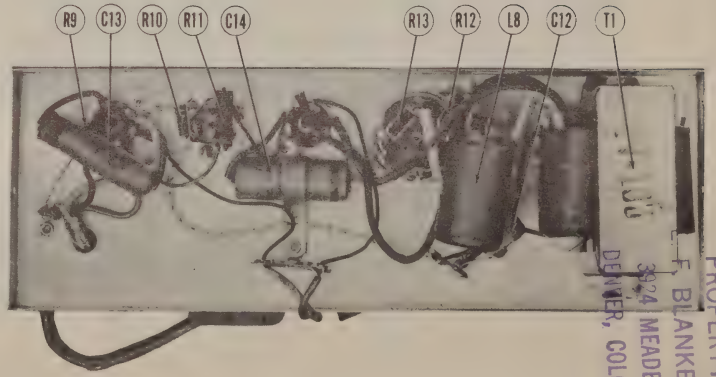
MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M3	Spark Plate		
M4	Fuse		15 Amp.
M5	3 Gang Var. Cap.		(20-402MMF, 16-403MMF, 33-217MMF)



CHASSIS—BOTTOM VIEW





PROPERTY OF
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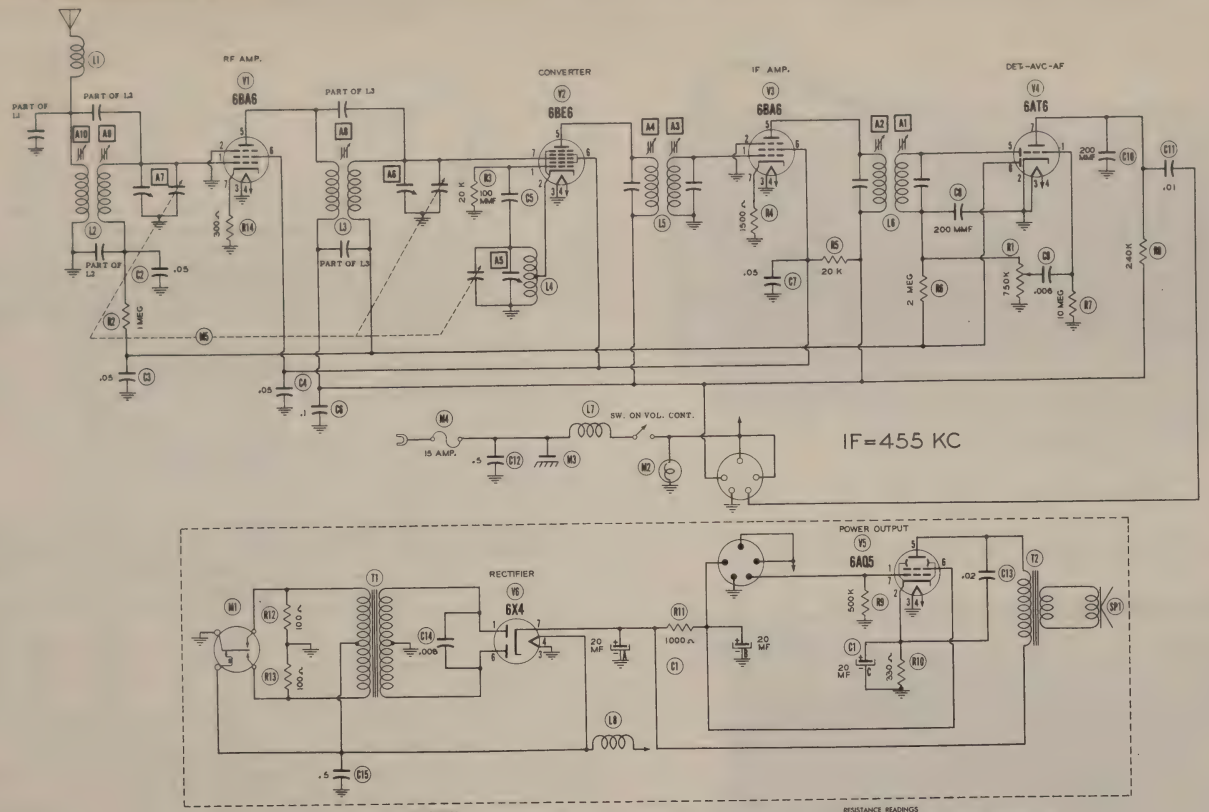
3824 MEADE ST.
DENVER, COLORADO

AUTOMATIC
MODEL F-100

SET 103 FOLDER 6

AUTOMATIC
MODEL F-100



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	-.2VDC	0V.	0V.	6.3VDC	220VDC	70VDC	1.3VDC
V 2	6BE6	1-7.3VDC	0V.	0V.	6.3VDC	220VDC	70VDC	-.6VDC
V 3	6BA6	0V.	0V.	0V.	6.3VDC	220VDC	70VDC	3.3VDC
V 4	6AT6	-.8VDC	0V.	0V.	6.3VDC	-.6VDC	-.6VDC	75VDC
V 5	6AQ5	0V.	9.8VDC	0V.	6.3VDC	230VDC	220VDC	0V.
V 6	6X4	280VAC	0V.	0V.	6.3VDC	0V.	280VAC	350VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	3.7 Meg.	0Ω	0Ω	.1Ω	†1000Ω	†21KΩ	300Ω
V 2	6BE6	20KΩ	1Ω	0Ω	.1Ω	†1000Ω	†21KΩ	3.7 Meg.
V 3	6BA6	21Ω	0Ω	0Ω	.1Ω	†1000Ω	†21KΩ	1.5KΩ
V 4	6AT6	10 Meg.	0Ω	0Ω	.1Ω	750KΩ	2.7 Meg.	1240KΩ
V 5	6AQ5	500KΩ	330Ω	0Ω	.1Ω	†400Ω	†1000Ω	500KΩ
V 6	6X4	250Ω	Inf.	0Ω	.1Ω	Inf.	250Ω	500KΩ

† MEASURED FROM PIN 7 OF V6.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CORONADO MODEL
05RA4-43-9876A (BATTERY-LINE OPERATED)

CORONADO MODEL
05RA4-43-9876A (BATTERY-LINE OPERATED)

CORONADO MODEL 05RA4-43-9876A

TRADE NAME	Coronado, Model 05RA4-43-9876A
SUPPLIER	Gamble-Skogmo Inc., 15 N. 8th St., Minneapolis, Minn.
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES(FIVE)	Types 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply.
RATING	.14 Amp. at 117 Volts AC or 56MA at 9 Volts DC and 9MA at 90 Volts DC
TUNING RANGE—BROADCAST	540-1605KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set center of pointer to last reference mark at low frequency end of dial backplate.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not connect a .1MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1R5 (V2). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.1MFD	High side to pin 6 (Grid) of 1U4 (V1). Low side to chassis.	1610KC	"	"	A5	Adjust for maximum output.
3.	.1MFD	"	1400KC	Tune for max. output	"	A6	"
4.		Loop	1400KC	"	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL 05RA4-43-9876A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amp.	1U4	1U4	6AR	
V4	DET-AVC-AF	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	50	150	18-296	AFH822J50A		UP4415C			▪ Filter
B	30	150				11			■ Filter
C	200	25							▲ Filament Bypass
C2	.05	200	16-152	P288-05		PTE4S5		TM-15	RF Grid Filter
C3	.05	200	16-152	P288-05		PTE4S5		TM-15	AVC Filter
C4	10	500	15-186	1468-00001	D6-100	5W5Q1	GP1K-10	MS-41	Osc. Grid Cap.
C5	.02	400	16-150	P488-02		PTE4S2		TM-12	Osc. Anode Dec.
C6	.005	600	16-153	P688-005	D6-502	PTE6D5	811-005	TM-25	IF Grid Filter
C7	.1	200	16-157	P288-1		PTE4P1		TM-1	Filament Bypass
C8	.1	200	16-157	P288-1		PTE4P1		TM-1	Filament Bypass
C9A	200		17-103	GP200M	D6-201	5W5T2	GP2K-200	1FM-32	Diode RF Filter
B	2000			GP2000M	D6-202	PTE6D2	GP2M-002	TM-22	Audio Coupling
C	5000			BPD-5	D6-502	PTE6D5	811-005	TM-25	AF Amp. Screen
D	100			GP100M	D6-101	5W5T1	GP1K-100	1FM-31	AF Amp. Plate
E	5000			BPD-5	D6-502	PTE6D5	811-005	TM-25	Audio Coupling
C10	.005	600	16-153	P688-005	D6-502	PTE6D5	811-005	TM-25	Output Plate
C11	.05	400	16-179	P488-05		PTE4S5		72P51	Line Isolation
C12	.05	400	16-179	P488-05		PTE4S5		TM-15	Line Filter

CONTROLS

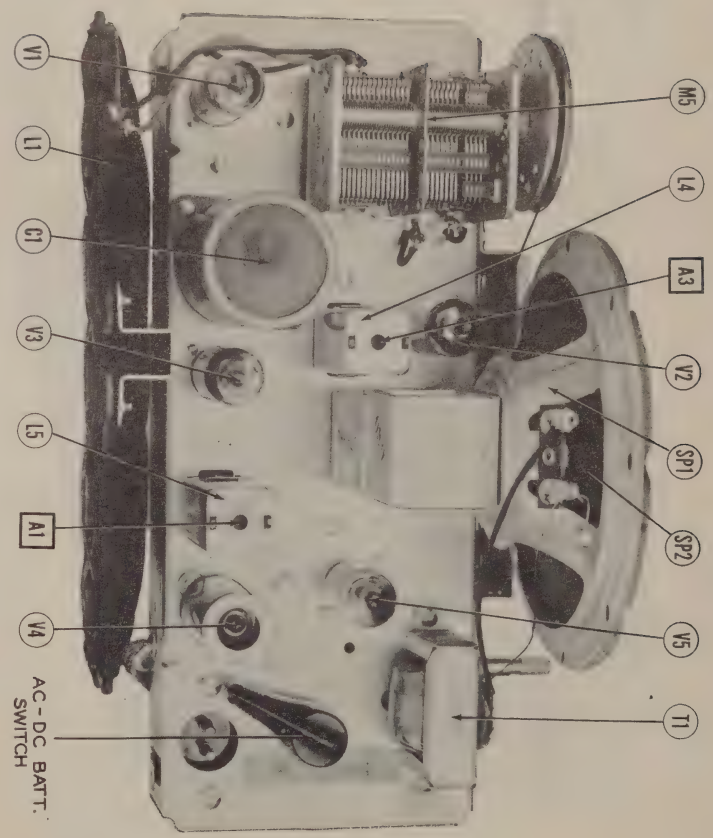
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	1 Meg.	½	24-186	Q13-137	AG-63-Z	BSK-70-S	Volume control and switch
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	
R2	4.7 Meg.	½	60-669	BTS-4.7 Meg.	RF Amp. Grid
R3	22KΩ	½	60-744	BTS-22K	RF Amp. Plate
R4	1500Ω	½	60-729	BTS-1500	Filament String
R5	680Ω	½	60-708	BTS-680	Filament String
R6	100KΩ	½	60-727	BTS-100K	Osc. Grid
R7	30KΩ	½	60-676	BTS-30K	Osc. Anode
R8	10 Meg.	½	60-728	BTS-10 Meg.	IF Amp. Grid
R9	470Ω	½	60-770	BTS-470	Filament String
R10	2.2 Meg.	½	60-726	BTS-2.2 Meg.	AVC Network
R11	47KΩ	½	60-730	BTS-47K	Diode Filter
R12	10 Meg.	½	60-728	BTS-10 Meg.	AF Amp. Grid
R13	4.7 Meg.	½	60-669	BTS-4.7 Meg.	AF Amp. Screen
R14	1 Meg.	½	60-668	BTS-1 Meg.	AF Amp. Plate
R15	820KΩ	½		BTS-820K	Output Grid-See Note 1
R16	330Ω	½	60-704	BW-½-330	Filament String
R17	20000Ω	10	60-757	AB-2000	Filament Dropping-Wire Wound
R18	1500Ω	½	60-729	BTS-1500	Filter
R19	110Ω	3	60-796		Surge Limiter-Wire Wound

Note 1. Some models use a 2.2 Meg. resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	8500Ω	3.6Ω	720Ω	.6Ω	80-228	A-3329 ①	A-2931	RO-13	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.		ST-105 ③		② Mount with universal mounting bracket provided.
SP1	PM	3.6Ω	79-380	MOD. P5-X	5A15 ②	③ Fabricate new mounting bracket.
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	
L1	Loop Ant.	.5Ω		82-66		
L2	RF Coil	12Ω	11.5Ω	10-535		7.2Ω tap on secondary
L3	Osc. Coil	7.4Ω	13.5Ω	10-553	14-1074	
L4	1st IF	22Ω	22Ω	10-508	16-6668	
L5	2nd IF	22Ω	22Ω	10-508	16-6669	

SELENIUM RECTIFIER

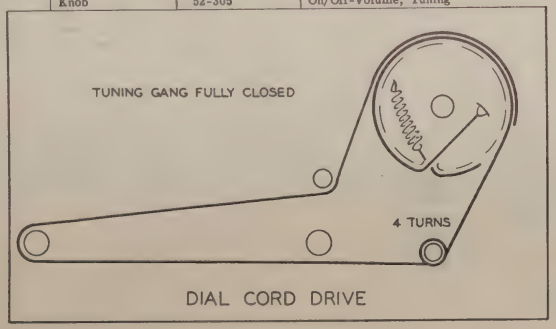
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	CORONADO PART No.	SYLVANIA PART No.		
M1	.067ADC	83-642	NB-5		

BATTERIES

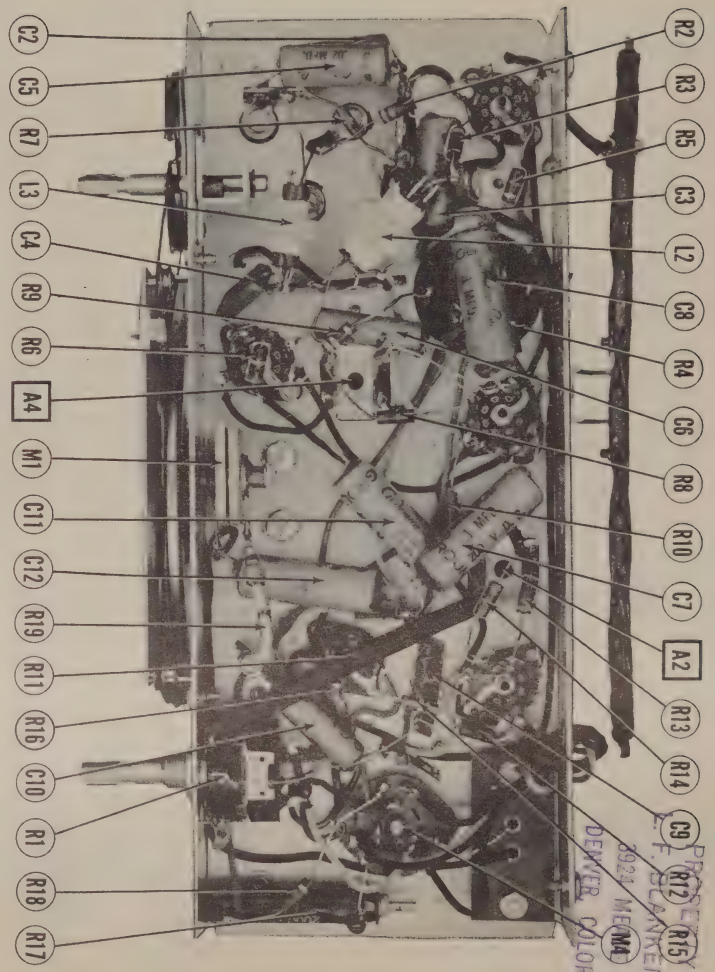
ITEM No.	VOLTAGE	CORONADO PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V "A"	43-302	746			G3			2 required
M3	90V "B"	43-266		482			M30		2 required

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M4	Switch	69-173	AC/DC-Battery
M5	3 Gang Var. Cap.	19-208	(27-492MMF, 15-221MMF, 9-157MMF)
	Cabinet	42-465	
	Dial Scale	67-552	
	Dial Pointer	58-63	
	Knob	52-196	AC/DC-Battery
	Knob	52-305	On/Off-Volume, Tuning



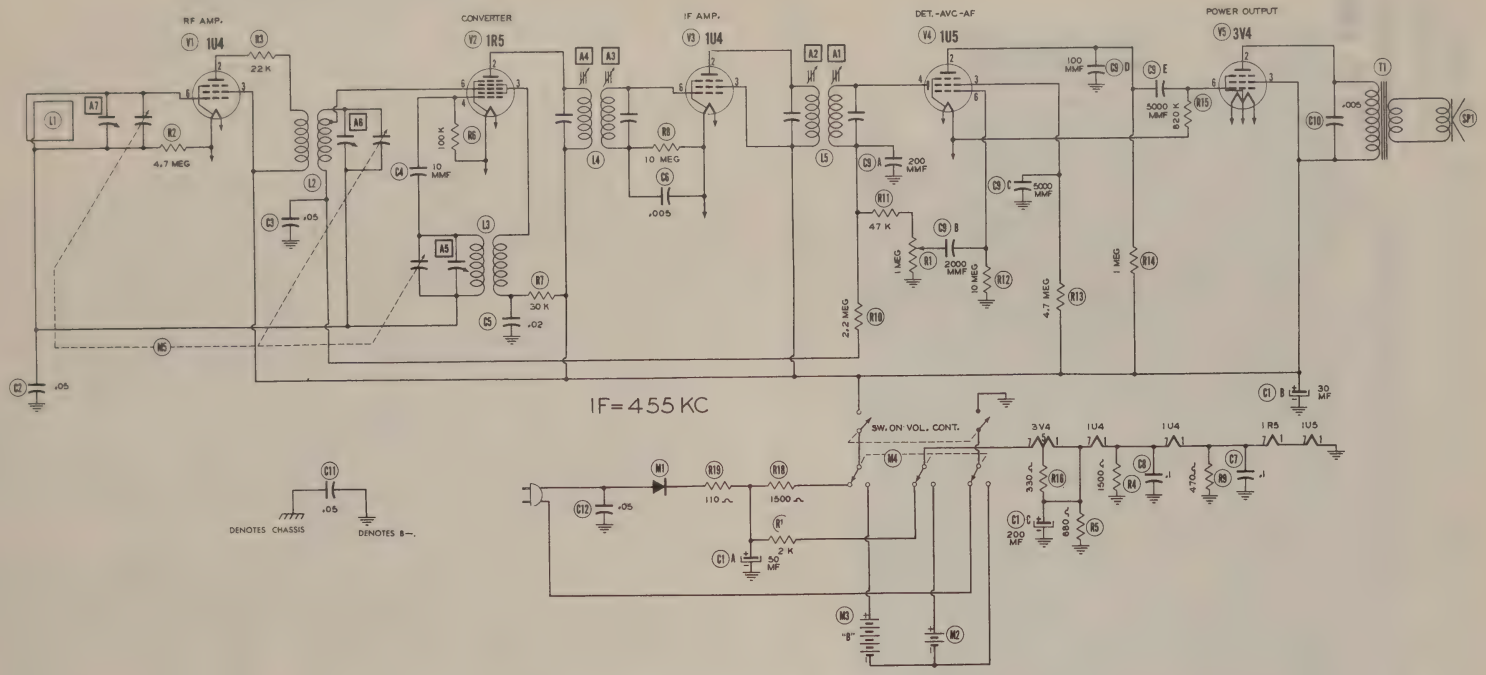
CHASSIS—BOTTOM VIEW



PROPERTY OF
F. C. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CORONADO
MODEL 05RA4-43-9876A

CORONADO
MODEL 05RA4-43-9876A



ON-OFF SWITCH MUST BE IN "ON" POSITION FOR B+ RESISTANCE READINGS.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	4VDC	60VDC	90VDC	0V.	4VDC	.3VDC	5.2VDC
V 2	1R5	1.4VDC	90VDC	45VDC	‡-14VDC	1.4VDC	0V.	2.6VDC
V 3	1U4	2.6VDC	90VDC	90VDC	0V.	2.6VDC	.1VDC	4VDC
V 4	1U5	0V.	20VDC	13VDC	-.2VDC	0V.	0V.	1.4VDC
V 5	3V4	5.2VDC	85VDC	90VDC	0V.	6.5VDC	.3VDC	8VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†23KΩ	†1.6KΩ	Inf.	*	4.7 Meg.	*
V 2	1R5	*	†1.6KΩ	†30KΩ	100KΩ	*	3.2 Meg.	*
V 3	1U4	*	†1.6KΩ	†1.6KΩ	3.2 Meg.	*	10 Meg.	*
V 4	1U5	*	†1 Meg.	†4.7 Meg.	1 Meg.	Inf.	10 Meg.	*
V 5	3V4	*	†3.3KΩ	†1.6KΩ	Inf.	*	820KΩ	*

† MEASURED FROM OUTPUT OF M1.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

EMERSON
MODEL 625 (Ch. 120105B)

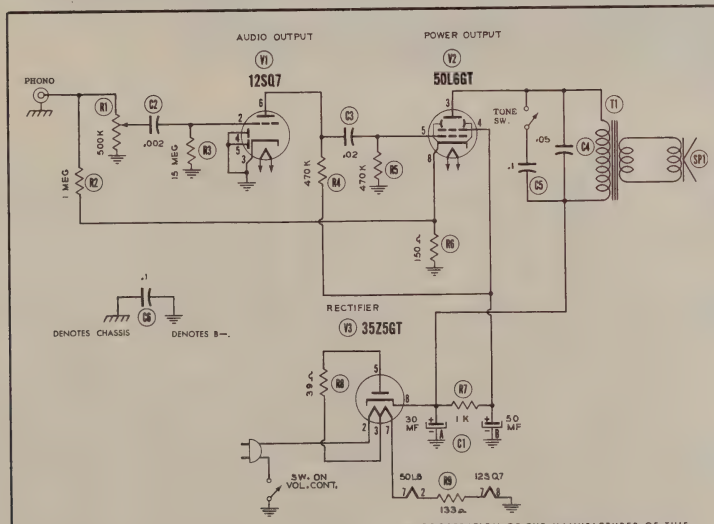
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

EMERSON
MODEL 625 (Ch. 120105B)

EMERSON
MODEL 625 (Ch. 120105B)

EMERSON MODEL 625

TRADE NAME	Emerson, Model 625 (Ch. 120105A)
MANUFACTURER	Emerson Radio and Phonograph Corp., 111 8th Ave, New York 11, New York
TYPE SET	AC Operated Phono Player with Three Tube Amplifier
TUBES (THREE)	Types 12SQ7 AF Amp., 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC
RATING	.23 Amp. at 117 Volts AC



Pin No.	12SQ7 Volt.	12SQ7 Res.	50L6GT Volt.	50L6GT Res.
1	0V.	Inf.	0V.	Inf.
2	-.4VDC	15 Meg.	30VAC	146Ω
3	0V.	0Ω	100VDC	†160Ω
4	0V.	0Ω	100VDC	†1000Ω
5	0V.	0Ω	0V.	470KΩ
6	57VDC	†470KΩ	0V.	0Ω
7	12VAC	13Ω	75VAC	196Ω
8	0V.	0Ω	6.6VDC	150Ω

Pin No.	35Z5GT Volt.	35Z5GT Res.
1	0V.	Inf.
2	117VAC	220Ω
3	105VAC	210Ω
4	0V.	Inf.
5	100VAC	249Ω
6	105VDC	†?Ω
7	75V AC	196Ω
8	105VDC	600KΩ

† MEASURED FROM PIN 8 OF V3.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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103-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Audio Amp.	12SQ7	12SQ7	8Q	
V2	Power Output	50L6GT	50L6GT	7AC	
V3	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	925105	PRSA150/30-50		EDL5315		TA-530	Filter-Red
B	50	150							Filter-Green
C2	.002	600	920010	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Audio Coupling
C3	.02	400	920020	P488-02		PTE4S2		TM-12	Audio Coupling
C4	.05	200	920060	P288-05		PTE4S5		TM-15	Output Plate Bypass
C5	.1	200	920040	P288-1		PTE4P1		TM-1	Tone Comp.
C6	.1	400	920250	P488-1		PTE4P1		TM-1	Line Isolation

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	390062	QII-133	AG-58-S	AN-59	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	K-155	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1 Meg.	½	351210	BTS-1 Meg.	Tone Compensation
R3	15 Meg.	½	351490	BTS-15 Meg.	AF Amp. Grid
R4	470KΩ	½	351130	BTS-470K	AF Amp. Plate
R5	470KΩ	½	351130	BTS-470K	Output Grid
R6	150Ω	1	370290	BW-1-150	Output Cathode
R7	1000Ω	1	370490	BTS-1000	Filter
R8	39Ω	1	370150		Rect. Ballast
R9	133Ω	5	394160		Filament Dropping-Wire Wound

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2200Ω	3.4Ω	160Ω	.6Ω	734054	A-3332 ①	A-3025 ①	RO-2 ②	① Bend one mounting tab down and remount in original holes. ② Drill new mounting holes.

SPEAKER

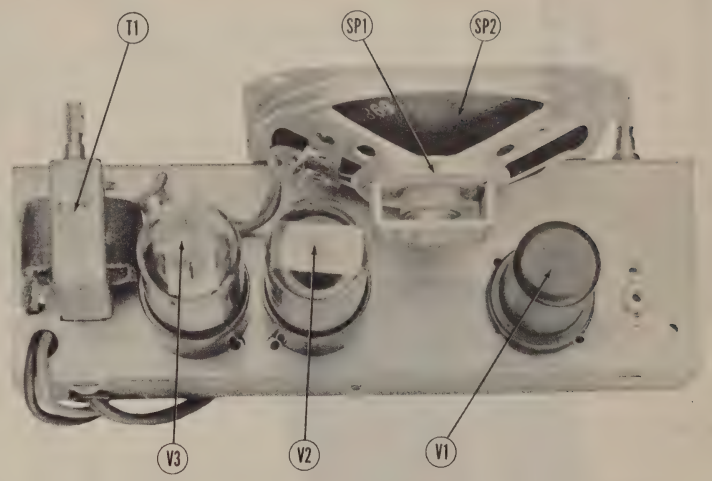
ITEM No.	RATINGS		REPLACEMENT DATA: EMERSON PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
SP1	FIELD: PM	V. C. IMP.: 3.4Ω	180067 or 180032	ST-113 MOD. P4-X	4A07	
SP2	CONE DIA.: 4"	V. C. DIA.: 9/16"				

PHONO CARTRIDGE and NEEDLE

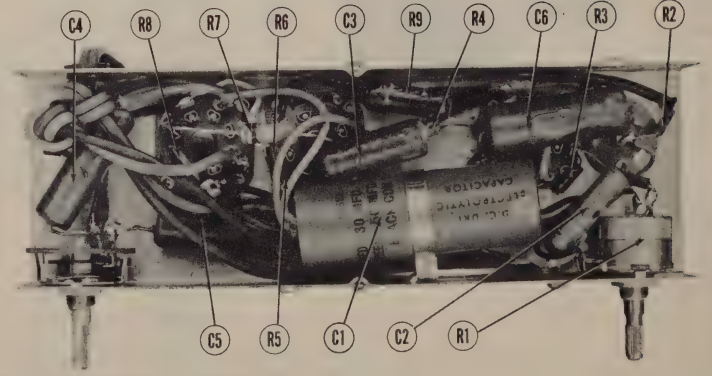
ITEM No.	REPLACEMENT DATA: EMERSON PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	REMARKS
M1		LQD-J	Q			

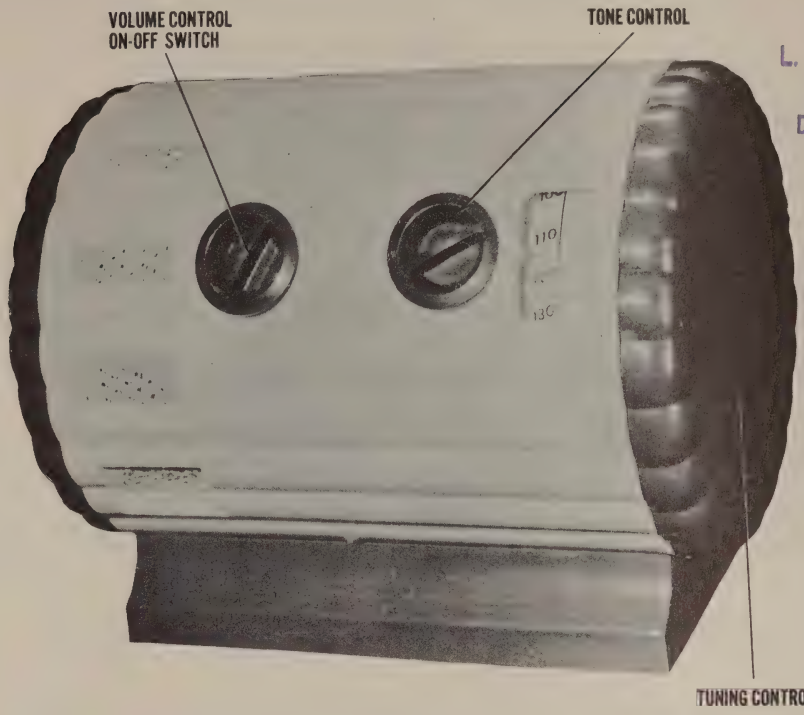
ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW





PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ESPEY
MODEL 31

ESPEY
MODEL 31

ESPEY MODEL 31

TRADE NAME	Espey, Model 31
MANUFACTURER	Espey Mfg. Co. Inc., 528 E. 72nd St., New York 21, New York
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET-AVC-AF, 50B5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	530-1750KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	.01MFD	"	1750KC	"	"	A5, A6	"
3.	Direct	High side to antenna lead. Low side to chassis.	1400KC	Tune for max. output	"	A7, A8	Adjust for maximum output. Repeat steps 2 and 3 until no further improvment can be made.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50B5	50B5	7BZ	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ESPEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150		PRS150/40-40		EDL4415		TA-440	Filter-Red
B	40	150							Filter-Red
C2	6800	300		1467-007	D6-682	1D3D7	811-01	1FM-27	Ant. Coupling
C3	4300	300		1467-004	D6-402	1D5D4	GP2M-004	1FM-24	Voltage Divider
C4	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	RF Coupling
C5	250	500		1468-00025	D6-251	5W5T25	GP2K-250	1FM-325	Osc. Grid Cap.
C6	.05	200		P288-05	DF-503	PTE4S5		TM-15-2	AVC Filter
C7	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C8	100	500		1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C9	.01	400		P488-01	D6-103	PTE4S1	811-01	TM-11-4	Audio Coupling
C10	.01	400		P488-01	D6-103	PTE4S1	811-01	TM-11-4	Tone Comp.
C11	220	500		1468-0002	D6-221	5W5T2	GP2K-220	1FM-32	AF Amp. Plate
C12	.01	400		P488-01	D6-103	PTE4S1	811-01	TM-11-4	Audio Coupling
C13	.01	400		P488-01	D6-103	PTE4S1	811-01	TM-11-4	Output Plate
C14	.05	400		P488-05	DF-503	PTE4S5		TM-15-4	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ESPEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	AG-60-Z	B-60-S	Volume control
B	Shaft			Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch			76-1	SWB	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	CM-1503	Q13-133	AG-60-Z	B-60	Tone control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R2A per instructions

RESISTORS

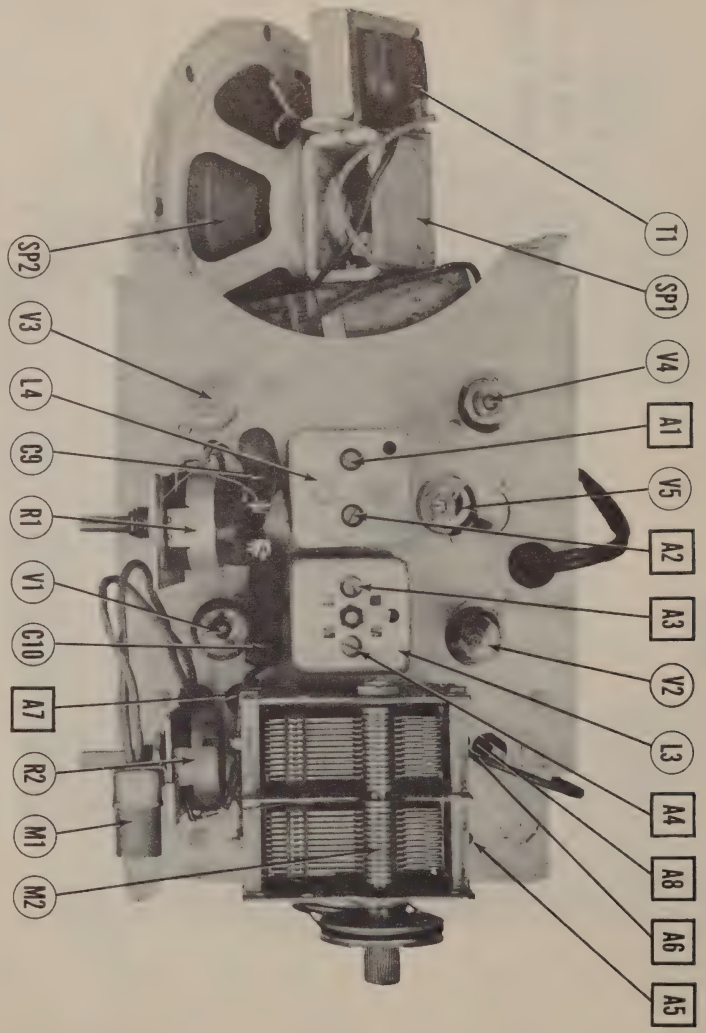
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ESPEY PART No.	IRC PART No.	IDENTIFICATION CODES
R3	220KΩ	½		BTS-220K	AVC Network
R4	15 Meg.	½		BTS-15 Meg.	AVC Network-Wire Wound-See Note 1
R5	22KΩ	½		BTS-22K	Osc. Grid
R6	3.3 Meg.	½		BTS-3.3 Meg.	AVC Network
R7	47KΩ	½		BTS-47K	Diode Filter
R8	6.8 Meg.	½		BTS-6.8 Meg.	AF Amp. Grid
R9	220KΩ	½		BTS-220K	AF Amp. Plate
R10	470KΩ	½		BTS-470K	Output Grid
R11	150Ω	½		BW-½-150	Output Cathode
R12	1000Ω	1		BTA-1000	Filter
R13	47Ω	½			Surge Limiter

Note 1. Some models use a 10 Meg resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ESPEY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	1800Ω	4.6Ω	170Ω	.6Ω		A-3876	A-2928	RO-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ESPEY PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105 ①		
SP1	PM	4.6Ω		MOD. P5-X	5A07 ①	① Remount output transformer
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

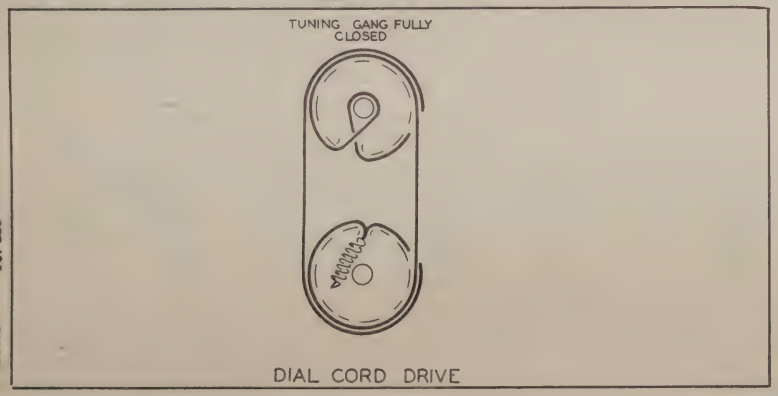
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: MEISSNER PART No.
L1	Ant. Coil	3.6Ω			
L2	Osc. Coil	.6Ω	5.2Ω		
L3	1st IF	15Ω	17Ω		16-6658
L4	2nd IF	14Ω	15Ω		16-6660

DIAL LIGHTS

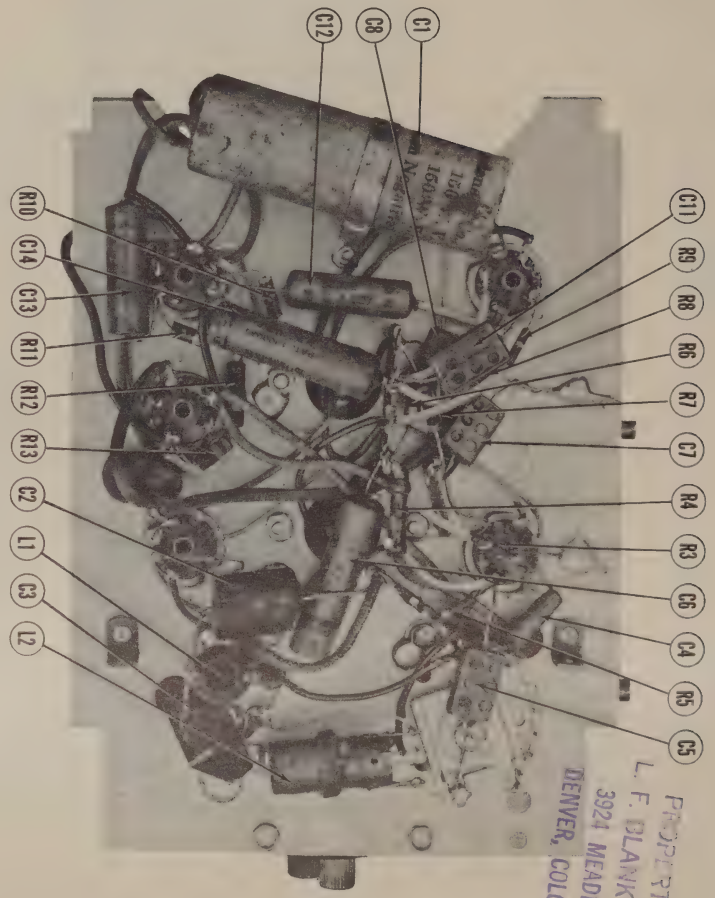
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA	NOTES
M1	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	ESPEY PART No.	NOTES
M2	2 Gang Var. Cap.		(20-542MMF, 25-561MMF)



CHASSIS—BOTTOM VIEW



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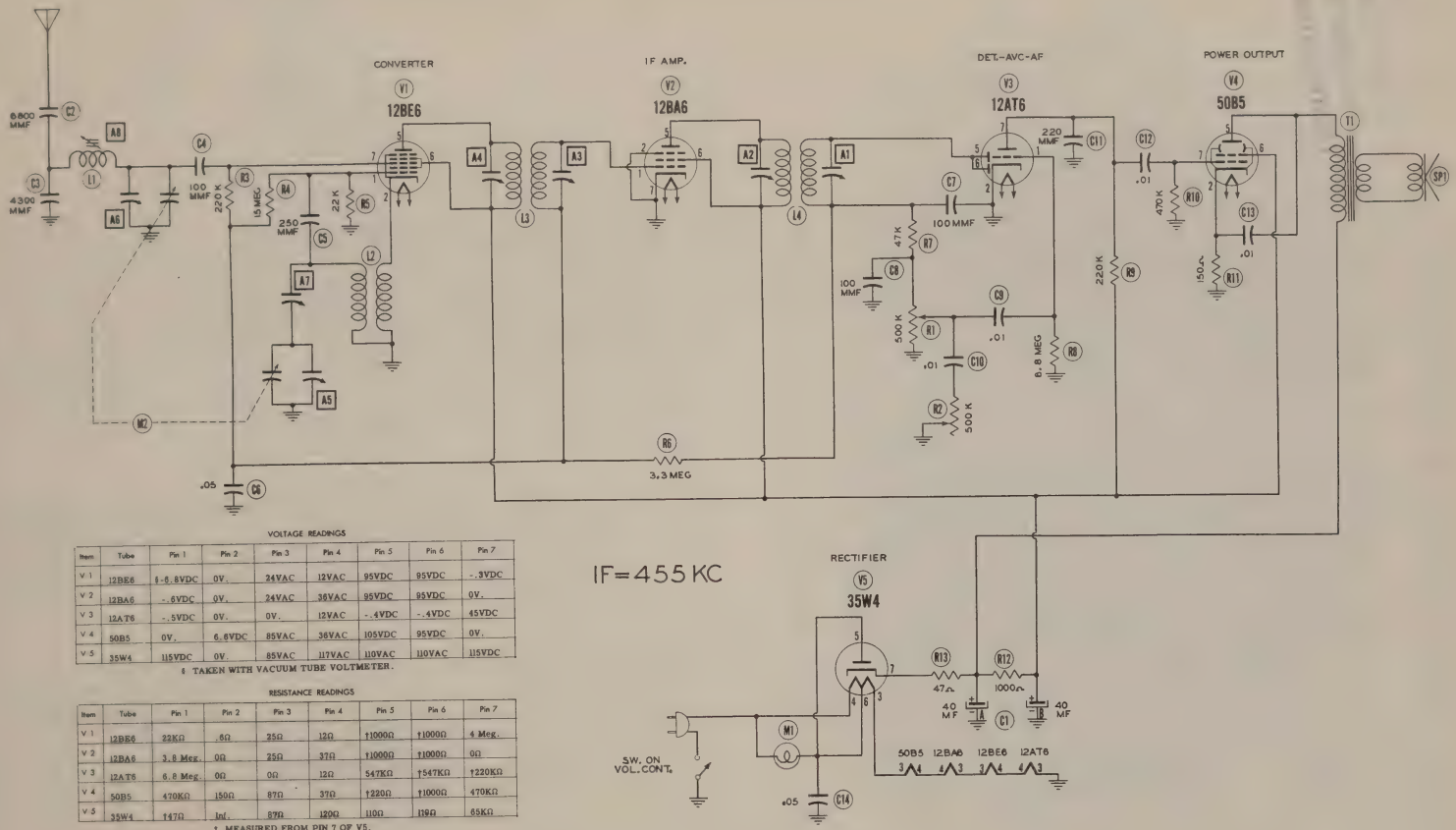

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	6-6.8VDC	0V.	24VAC	12VAC	95VDC	95VDC	-.3VDC
V 2	12BA6	-.6VDC	0V.	24VAC	36VAC	95VDC	95VDC	0V.
V 3	12AT6	-.5VDC	0V.	0V.	12VAC	-.4VDC	-.4VDC	45VDC
V 4	50B5	0V.	6.6VDC	85VAC	36VAC	105VDC	95VDC	0V.
V 5	35W4	115VDC	0V.	85VAC	117VAC	110VAC	110VAC	115VDC

δ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	25Ω	12Ω	†1000Ω	†1000Ω	4 Meg.
V 2	12BA6	3.8 Meg.	0Ω	25Ω	37Ω	†1000Ω	†1000Ω	0Ω
V 3	12AT6	6.8 Meg.	0Ω	0Ω	12Ω	547KΩ	†547KΩ	†220KΩ
V 4	50B5	470KΩ	150Ω	87Ω	37Ω	†220Ω	†1000Ω	470KΩ
V 5	35W4	†47Ω	Inf.	87Ω	120Ω	110Ω	119Ω	65KΩ

† MEASURED FROM PIN 7 OF V5.

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103-9

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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MOTOROLA MODEL 800

MOTOROLA MODEL 800

TRADE NAME	Motorola, Model 800
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Universal Automotive Superheterodyne Receiver
TUBES (EIGHT)	Types 6BA6 RF Amp., 6BE6 Converter, 6BA6 IF Amp., 6AT6 DET-AVC-AF, 6AT6 Phase Inv., (2) 6AQ5 Power Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 8.3 Amp. at 6 Volts DC
TUNING RANGE—BROADCAST	535-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 6BE6 (V2). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning cores fully out	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	See Fig 1	High side thru dummy to antenna receptacle. Low side to chassis.	1610KC	Tuning cores fully out. (cores should project 1 1/8 ins. out of cans.	"	A5, A6, A7	"
3.	"	"	1400KC	Tune for max. output	"	A8, A9, A10	"

AFTER SET IS INSTALLED, FULLY EXTEND ANTENNA AND TUNE IN A WEAK STATION NEAR 1400KC. ADJUST A7 FOR MAXIMUM VOLUME.

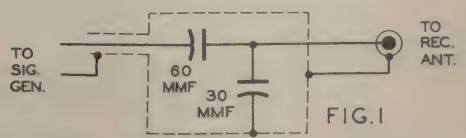

FIG. 1

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT ▲	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amp.	6BA6	6BA6	7BK	
V4	DET-AVC-AF	6AT6	6AT6	7BT	
V5	Phase Inv.	6AT6	6AT6	7BT	
V6	Power Output	6AQ5	6AQ5	7BZ	
V7	Power Output	6AQ5	6AQ5	7BZ	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	350	23A473015	AFH6H6G4A		UP335-330C		EL-323	■ Filter ▲ Filter
B	30	300							Output Cath. Byp.
C	20	25							Fixed Trimmer
C2	100		21B77562	GP100M	D6-101	5W5T1	GPIK-100	1FM-31	RF Coupling
C3	.006	100	8A4529	P488-006	D6-562	PTE6D6	811-005	TM-26	RF Coupling
C4	5		21K70720	GP5M	D2-4.7	5W5V5	GPIK-5	MS-55	Decoupling
C5	.1	400	8R13166	P488-1		PTE4P1		TM-1	AVC Filter
C6	.05	100	8A13514	P288-05		PTE4S5		TM-15	Osc. Grid Cap.
C7	47		21K74661	GP47M	D6-470	5W5Q5	GPIK-47	1FM-45	Fixed Trimmer
C8	500		21K592327	SI500JN150			N150M-500		Audio Coup.
C9	.006	100	8A4529	P488-006	D6-562	PTE6D6	811-005	TM-26	Bias Filter
C10	.1	100	8R472035	P288-1		PTE4P1		TM-1	IF Coupling
C11	5		21K70720	GP5M	D2-4.7	5W5V5	GPIK-5	MS-55	AF Amp. Plate Byp.
C12	1000	500	21R6638	1468-001	D6-102	1W5D1	GP2L-001	1FM-21	Tone Comp.
C13	.006	100	8A4529	P488-006	D6-562	PTE6D6		TM-26	Hash Filter
C14	.5	100	8K17028	P288-5				68P20	Audio Coupling
C15	.03	400	8R71911	P488-03		PTE6S3		TM-13	Audio Coupling
C16	.03	400	8R71911	P488-03		PTE6S3		TM-13	Output Plate Byp.
C17	.003	1000	8R13165	P1088-003		PTE16D3		MB-23	Buffer
C18	.006	1600	8K12840	P1688-006		PTE16D6		MB-26	Hash Filter
C19	.5	100	8K17028	P288-5				68P20	

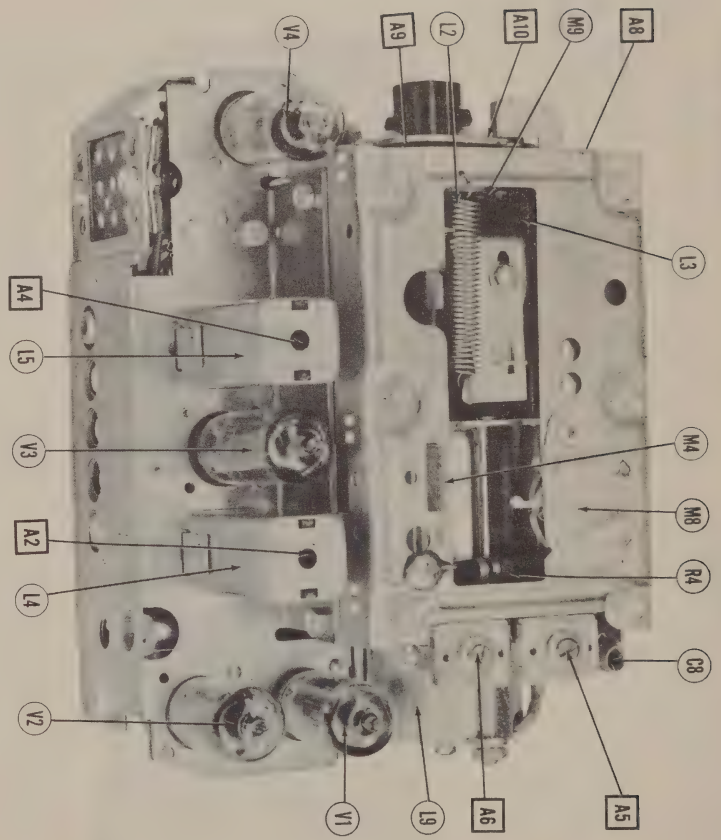
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	500KΩ	½	1A472531				Volume control and switch

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	470KΩ	½	6R6032	BTS-470K	AVC Network
R3	470Ω	½	6R6090	BTS-470	RF Cathode
R4	5.6Ω	1	17K484497	BW-1-5.6	Solenoid Shunt-Wire Wound
R5	100KΩ	½	6R6075	BTS-100K	Conv. Grid
R6	47KΩ	½	6R6056	BTS-47K	Osc. Grid
R7	470Ω	½	6R6090	BTS-470	IF Cathode
R8	6800Ω	1	6R6287	BTA-6800	Decoupling
R9	1 Meg.	½	6R6004	BTS-1 Meg.	AVC Network
R10	1 Meg.	½	6R6004	BTS-1 Meg.	Diode Load
R11	47KΩ	½	6R6056	BTS-47K	Diode Filter
R12	2200Ω	½	6R6290	BTS-2200	AF Amp. Cathode
R13	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Bias Network
R14	10 Meg.	½	6R2109	BTS-10 Meg.	AF Amp. Grid
R15	470KΩ	½	6R6032	BTS-470K	AF Amp. Plate
R16	47KΩ	½	6R6056	BTS-47K	Tone Compensation
R17	10KΩ	½	6R6054	BTS-10K	Phase Inv. Grid
R18	2200Ω	½	6R6069	BTS-2200	Phase Inv. Cathode
R19	220KΩ	½	6R6015	BTS-220K	Phase Inv. Plate
R20	220KΩ	½	6R6015	BTS-220K	Output Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
	RESISTANCE	WATTS			
R21	220KΩ	1	6R6805	BTS-220K	Output Grid
R22	270Ω	1	6R6336	BW-1-270	Output Cathode
R23	1500Ω	1	6R6386	BW-1-1500	Filter
R24	10KΩ	1	6R6054	BTS-10K	Buffer
R25	470Ω	2	6R3949	BTS-470	Bias Network
R26	56Ω	1	6R5814	BW-1-56	Hash Suppression
R27	56Ω	1	6R5814	BW-1-56	Hash Suppression

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.
	PRI.	SEC. 1	SEC. 2	SEC. 3				
T1	6VDC @ 3.6A	500VCT .065ADC			25K590850		P-3088 ①	

① Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
	IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.					
T2	8700Ω CT	3.5Ω	390Ω CT	.3Ω	25K472558	A-3856	A-3938	RO-302	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA JENSEN PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-108		
SP1	PM	3.5Ω	50B592351	MOD. P6-X	6A15	
	CONE DIA.	V. C. DIA.				
SP2	6"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Ant. Coil	1Ω		24B71881 *		Specify dot color when ordering
L2	RF Coil	1Ω		24B71881 *		Specify dot color when ordering
L3	Osc. Coil	.9Ω	3Ω	24B592153 *		Specify dot color when ordering
L4	1st IF	16Ω	19Ω	24B485553	16-6758	
L5	2nd IF	17Ω	17Ω	24K485555	16-6758 †	
L6	Hash Choke	0Ω		24K592269		
L7	Hash Choke	0Ω		24K592269		
L8	Hash Choke	.2Ω		24A472535-0		
L9	Solenoid Coil	*				

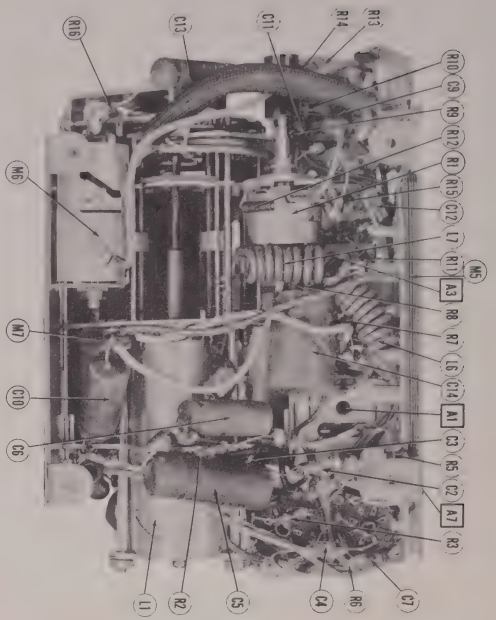
* Part of solenoid tuner ST-76

† Add 100MMFD from lug 2 to ground
Add 100MMFD from volume control to ground
Connect same resistor to lug 3 and volume control

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA AEROVOX PART No.	REPLACEMENT DATA CORNELL DUBILIER PART No.	REPLACEMENT DATA RADIART PART No.	INSTALLATION NOTES
M1	Int.	6V	115 ~	48B3333	A-200	C-00	5342	

CHASSIS—BOTTOM VIEW



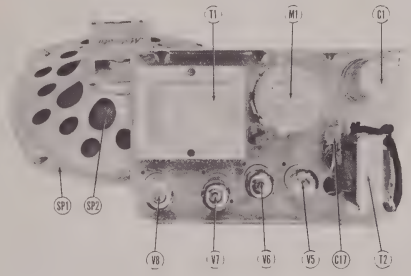
PARTS LIST AND DESCRIPTIONS (Continued)

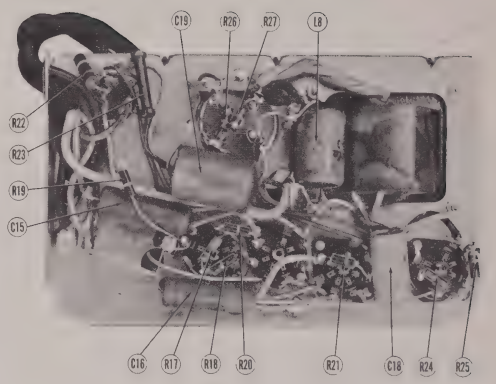
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA MOTOROLA PART No.		NOTES
M2	Bayonet	6-8	.2	White	65X4151		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Fuse	65K4637	20 Amp. SFE
M4	Tuner	1X592280	Solenoid
M5	Spark Plate	1B592133	
M6	Relay	1X592220	Tone
M7	Switch	40A472644	Mute
M8	Switch	1B70944	Solenoid
M9	Switch	40B70952	Selector
A5	Trimmer	30K472612	Osc. Adj.
A6	Trimmer	30K481527	RF Adj.
A7	Trimmer	20A592135	Ant. Adj.





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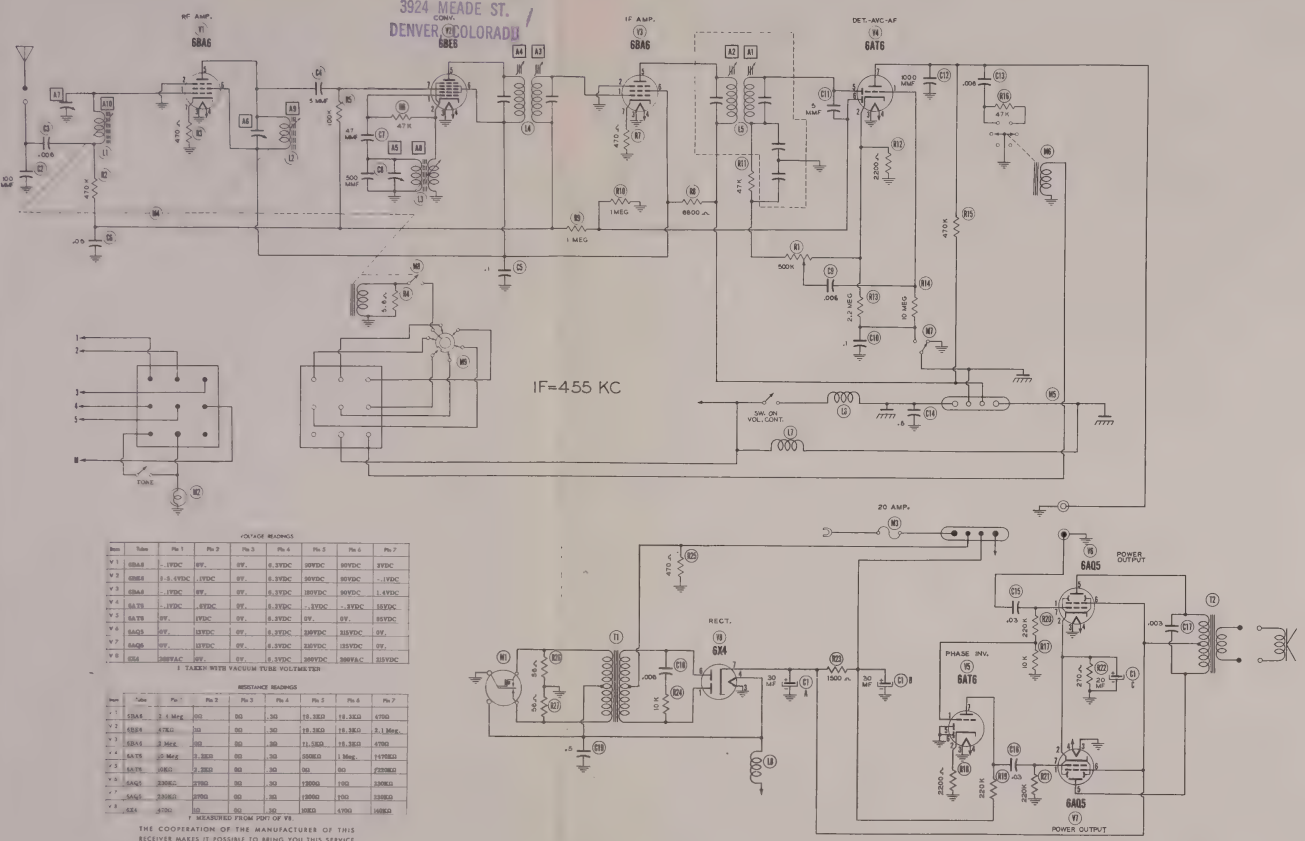

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	-.1VDC	0V.	0V.	6.3VDC	90VDC	90VDC	2VDC
V 2	6BE6	5-6.5VDC	.1VDC	0V.	6.3VDC	90VDC	90VDC	-.1VDC
V 3	6BA6	-.1VDC	0V.	0V.	6.3VDC	180VDC	90VDC	1.4VDC
V 4	6AT6	-.1VDC	.6VDC	0V.	6.3VDC	-.1VDC	-.1VDC	15VDC
V 5	6AT6	0V.	1VDC	0V.	6.3VDC	0V.	0V.	95VDC
V 6	6AQ5	0V.	13VDC	0V.	6.3VDC	195VDC	315VDC	0V.
V 7	6AQ5	0V.	13VDC	0V.	6.3VDC	215VDC	135VDC	0V.
V 8	6X4	360VAC	0V.	0V.	6.3VDC	360VDC	360VAC	315VDC

† TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	2.4 Meg	0Ω	0Ω	0Ω	10.5KΩ	10.5KΩ	470Ω
V 2	6BE6	47KΩ	0Ω	0Ω	0Ω	10.5KΩ	10.5KΩ	2.1 Meg.
V 3	6BA6	2 Meg.	0Ω	0Ω	0Ω	11.5KΩ	10.5KΩ	470Ω
V 4	6AT6	2 Meg.	2.2MΩ	0Ω	0Ω	550KΩ	1 Meg.	1470KΩ
V 5	6AT6	0KΩ	2.2MΩ	0Ω	0Ω	0Ω	0Ω	720KΩ
V 6	6AQ5	230KΩ	270Ω	0Ω	0Ω	1200Ω	70Ω	130KΩ
V 7	6AQ5	230KΩ	270Ω	0Ω	0Ω	1200Ω	70Ω	130KΩ
V 8	6X4	470Ω	0Ω	0Ω	0Ω	90KΩ	470Ω	90KΩ

† MEASURED FROM PIN 7 OF V8.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PHILCO
MODEL M-20

Figure 1

GENERAL INFORMATION

The Philco M-20 Record Changer is a three-speed changer. It is designed to play automatically up to ten - 12″ records, twelve - 10″ records, or twelve - 7″ (children's records with the lead-in and eccentric trip groove) at 78 RPM; ten - 12″ records, twelve - 10″ records or twelve - 7″ records a 33-1/3 RPM; twelve - 7″ 45 RPM records with the adapter inserted.

NOTE: Do not, in any case, intermix records.

The changer will continue to play the last record until the changer is turned off.

A safety feature is employed in the pickup mechanism to prevent damage to the mechanism if, at any time, the arm is held during the change cycle.

Non-standard, home recordings and badly warped records should be played in the "Manual" position.

A single pickup cartridge is used, which is pivoted in the tone arm (as indicated on the tone arm), to play the 78 RPM and 45-33-1/3 RPM records.

This changer operates on 117 volts AC, at 60 Cycles.

Manufactured by
Philco Radio and Television Corporation
Philadelphia, Pennsylvania

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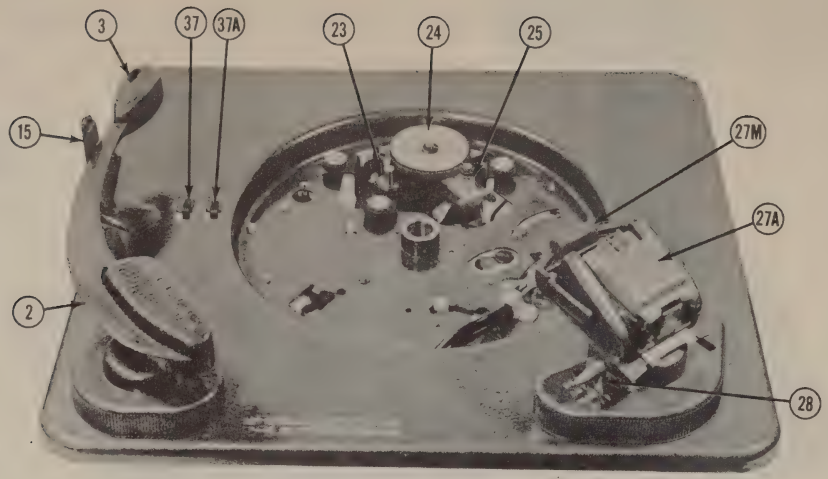

Figure 2

OPERATING PROCEDURE

To Play 10" and 12" Long-Play, 33-1/3 Records:

1. Swing the 10" - 12" hold-down away from the spindle.

2. Fold back the 7" push-off cover into the 10" and 12" push-off cover.

3. Rotate the record shelf assembly to the 10" or 12" position, depending on the type of record to be played.

4. Place a stack of ten - 12" records or twelve - 10" records (not intermixed) on the spindle, allowing it to come to a rest on the spindle ledge and the record shelf.

5. Place the 10" and 12" hold-down (27M) on the top record.

6. Move the "Std. Play - 45 - Long Play" control to "Long Play".

7. Pivot the pickup cartridge to the position marked "45 Long Play", as indicated on the tone arm.

8. Move the "Off-Man.-Auto.-Rej." control to "Rej." and release; this starts the motor and the automatic operation of the changer. The changer will now play the entire stack of records and will continue to play the last record until the changer is turned off.

To Play 7", 33-1/3 RPM Records:

1. Rotate shelf assembly to the 10" position.

2. Swing the 10" and 12" hold-down (27M) away from the spindle.

3. Pivot the 7" record shelf toward the spindle.

NOTE: Do not allow the 7" record shelf, 7" hold-down, or the 10" - 12" hold-down to snap into place, as this may chip or break these parts.

4. Place a stack of twelve - 7" records on the spindle, allowing it to come to a rest on the spindle ledge and record shelf.

5. Place the 7" hold-down (27B) on the top record.

6. The mechanism is set and is operated in the same manner as for 10" and 12" long-play, 33-1/3 RPM records.

To Play 7", 45 RPM Records:

1. Be sure the 7" 45 RPM records have the adapter inserted.

2. With the 7" record shelf opened to position, place a stack of twelve - 7" records on the spindle and 7" record shelf.

3. Place the 7" hold-down (27B) on the top record.

4. Move the "Std. Play - 45 - Long Play" control to "45" position.

5. The pickup cartridge should be in the "45 Long-Play" position, as indicated on the tone arm.

6. Move the "Off-Man.-Auto.-Rej." control to "Rej." and release. The entire stack of records will now be played automatically and will continue to play the last record until the changer is turned off.

To Play Standard (78 RPM) Records:

1. The standard 7" - 10" and 12", 78 RPM records are placed on the spindle in the same manner as the 7" - 10" and 12", 33-1/3 RPM records.

2. Move the "Std. - 45 - Long Play" control to "Std." position.

3. Move the cartridge in the tone arm to "S-P" position.

4. Move the "Off-Man.-Auto.-Rej." control to "Rej." and release. The changer will now play the

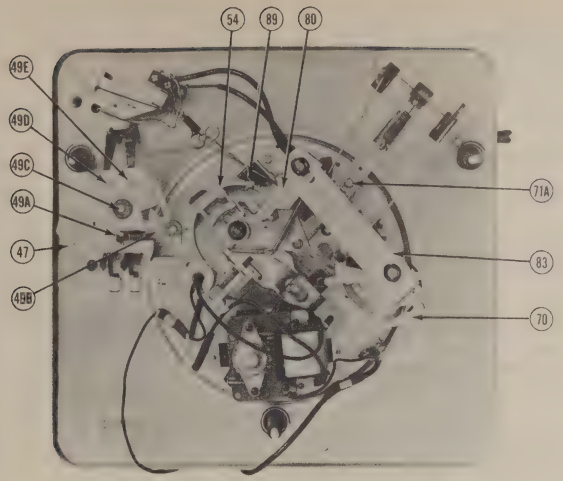

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Figure 3

entire stack of records and will continue to play the last record until the changer is turned off.

Manual Operation:

1. Turn the record shelf to the 12" position. This is to provide a clearance for placing records on the turntable.

2. Place the record to be played on the turntable.

3. Move the "Std. - 45 - Long Play" control to the proper position, depending on the type of record to be played.

4. Set the cartridge in the tone arm to the proper position.

5. Move the "Off-Man.-Auto.-Rej." control to "Man." position; this starts the turntable rotating.

6. Place the tone arm in the starting groove of the record.

7. Upon completion of the record, raise the tone arm from the record and place it on the tone arm rest post (15); then move the control to the "Off" position and remove the record.

CHANGE CYCLE

As the tone arm (2) moves into the eccentric groove of the record, its oscillation causes the trip finger (49A), Figure 3, of the trip receiver (49) to push against the screw of the trip plate (54). This action moves the trip plate from in front of the roller of the retractable segment on the bottom of the cam gear (53), allowing the segment to mesh with the turntable hub gear which is in constant rotation. This starts the change cycle.

As the cam gear rotates, cam surface (53A) actuates the vertical actuator, the vertical timing link (52A), spring, and pull-cord assembly (10), which raises the tone arm off the record. Cam surface (53B) now actuates the horizontal timing link (76), which, through the media of the link (52), cord and spring (51), swings the pickup arm out against the rubber pad on the arm rest (15).

Cam roller on the top side of the cam moves against the push-off actuator (68), which, in turn, operates the push-off mechanism, thus selecting and dropping a record to the turntable.

The trip plate (54) and the retractable segment on the bottom of the gear are reset (out of cycle position), at this time, by the engagement of the roller on the segment with the trip plate (54). At approximately the same time the push mechanism is actuated. Finger "X" of the selector hinge (41) is contacted by the cam (53), causing the feelers to be raised above the turntable and the selector hinge (41) to move upward into position.

The cam action on the gear now swings the tone arm in for set-down. For 7" set-down, the inward motion of the tone arm is stopped by the index stop (47) engaging the finger of the selector hinge (41). For 10" set-down, the weight of the record on the 10" feeler will depress it, thus allowing the index stop (47) to engage the 10" selector. For 12" set-down, the weight of the record depresses feeler (37), Figure 2, allowing the index stop (47) to engage the 12" selector.

The horizontal actuator (76) now lowers the tone arm to the starting groove of the record.

Finger "X" of the selector hinge (41) rides off the top of the cam. This, through the action of the tension spring (44), moves the selector assembly from in front of the index stop (47), giving the tone arm free movement across the record.

The cam is now held in a neutral position by the engagement of the index lever (43) and the cam roller mounted on the top of the cam. This completes the change cycle.

Reject Operation:

When the "Off-Man.-Auto.-Rej." control is pushed to "Rej.," the slide control bar (56) is pulled against the trip plate (54) by the control link (86). This

trips the change and starts the change cycle; therefore, a record may be rejected any time, while playing, by moving the control to "Rej."

Operation of the "Man." Control:

When the "Off-Man.-Auto,-Rej." control is moved to the "Man." position, lip "A" of the control bar (56) engages a flange on the retractable segment of the cam gear.

Automatic Trip Operation for 45 RPM Records:

Since the playing and eccentric cycling grooves on the 45 RPM records are not cut as close to the center of the record as in the 33-1/3 and 78 RPM records, an additional trip mechanism has been added so that the changer may function properly.

When the needle of the tone arm enters the eccentric cycling groove of a 45 RPM record, the trip stop (49B) engages the trip lever (89), which releases the hammer (63), and causes it to move against the trip plate (54); this, in turn, releases the gear retractable segment to engage the turntable hub gear and start the change cycle (see Figure 3).

ADJUSTMENTS

Tone Arm Positioning for 7" - 10" and 12" Records: (Refer to Figure 5)

Note: Before adjusting the set-down position of the tone arm, check the 7" selector to see that it has not been bent . . it must be straight and perpendicular to the base plate.

1. Remove the power cord.

2. Place a 7" record on the turntable.

3. Move the "Off-Man.-Auto.-Rej." control to "Rej." and release.

4. Rotate the turntable in a clockwise direction until the tone arm needle is approximately 1/2" above the record.

5. Loosen the clamp screw in the trip arm (49) slightly.

6. Hold the tone arm about 1/8" in from the edge of the record, and set the trip arm (49) so that the magnetic stop (47) is in contact with the 7" selector. The index stop (47) should engage the 7" selector by a minimum of 1/8".

7. Tighten the clamp screw, leaving 1/32" vertical play or clearance between the trip arm and the base plate.

8. After making the index adjustment for 7" records first, place a 10" record on the turntable and proceed in the same manner as in steps 3 and 4. If the 10" set-down is not satisfactory after the 7" index adjustment is made, bend the 10" selector (Figure 5) to the right, or left, to correct the landing.

9. For 12" set-down, place a 12" record on the turntable and adjust the set-down in the same manner as described in Step 8.

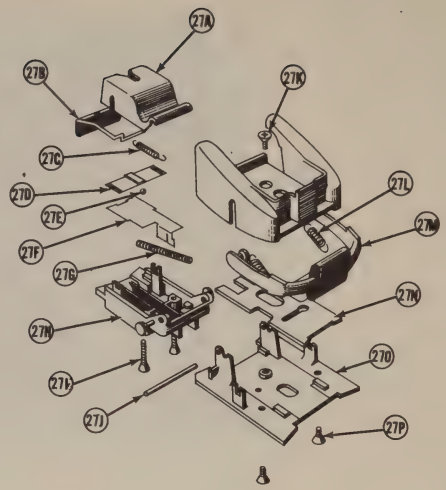

Figure 4

Tone Arm Height:

1. With the changer out of cycle, place the tone arm over the base plate.

2. Check the clearance between the needle and the base plate. There should be at least 3/16" clearance.

3. Adjust the clearance by bending the protruding ear of the swivel post (13).

4. Raise the tone arm to its maximum height and place it against the arm rest post (15). There should be a minimum of 1/8" clearance. Adjust the ear on the swivel post until a mean is reached between the correct rest post and base plate clearance.

Automatic Trip for 10" and 12" Records:

1. Place a 10" record on the turntable.

2. Move the speed selector to either "Std. Play" or "Long Play".

3. Move the "Off-Man.-Auto.-Rej." control to "Auto".

4. Place the tone arm in the eccentric cycling groove of the record.

5. At this position, the trip finger (49A) rides over the trip serration on the trip plate (54) and should assume an angle of 25° to 30° with respect to the trip plate.

6. To obtain the correct angle, adjust the screw (49C) (see Figure 3) on the trip receiver (48).

7. Check the vertical center line of the trip finger to see if it coincides with the center line of the ratchet. To obtain this alignment, loosen screw (49D) slightly - and screw (49E) completely - on the trip receiver (48) (Figure 3), and swing the trip receiver to the right, or left, rotating around point (49D) until

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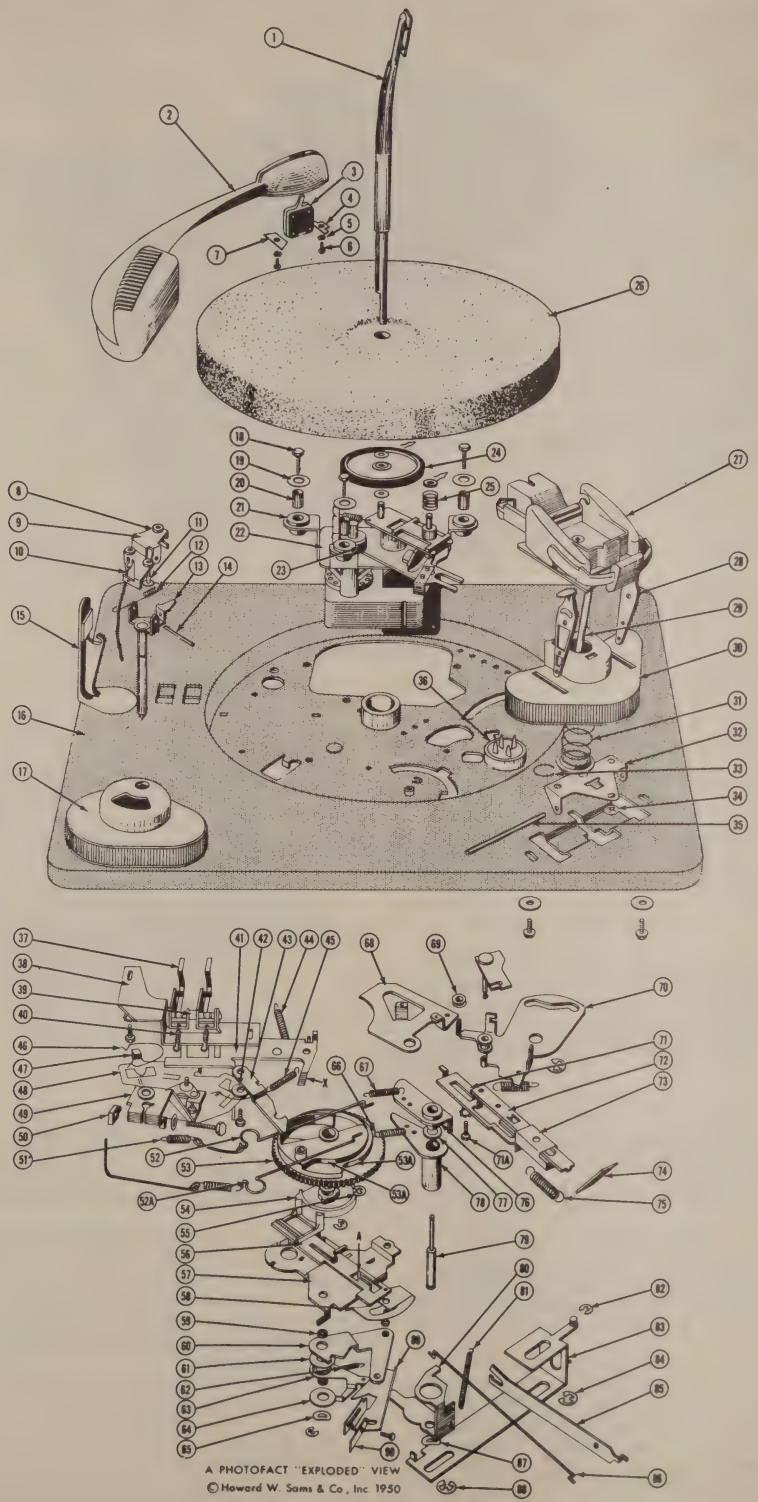

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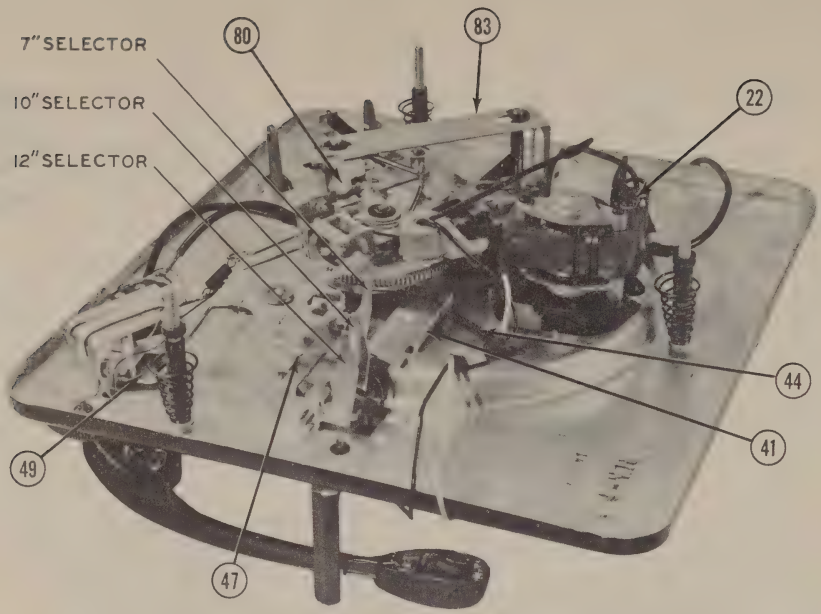

Figure 5

the trip finger (49A) is centered over the ratchet; then tighten the screws.

NOTE: Care should be taken to prevent the trip receiver from being pulled in toward the trip arm too far, as this will prevent the trip arm stop from engaging the selector hinge by a minimum of 1/8". A compromise between these two adjustments should be reached. The index adjustment will be affected when making the above adjustments, as these three are interrelated; therefore, when any one of these adjustments is made, the other two should be rechecked.

Tone Arm Horizontal and Vertical Timing:

NOTE: Before making the horizontal and vertical adjustments, make the Tone Arm Height Adjustment first.

1. Vertical Timing:

   (a) With the power cord removed and the changer out of cycle, push the "Off-Man.-Auto.-Rej." control to "Rej." and release.

   (b) Rotate the turntable, by hand, approximately 1-1/2 revolutions. At this point, cam (53A) of the gear assembly (53) fully engages the vertical actuator (78).

   (c) Adjust the wire loop (52A) by squeezing or opening the loop so that the safety spring is expanded approximately 1/32". With this adjustment, the ear of the tone arm swivel post (13) makes firm contact with the lower end of the cutout on the tone arm pivot assembly.

2. Horizontal Timing:

   (a) The horizontal timing may be adjusted by leaving the changer in the same position as for the vertical timing, which is 1 1/2 revolutions of the turntable from the start of the change cycle. At this point, cam surface (53B) fully engages the horizontal actuator (76).

   (b) Adjust the wire loop (52) until the safety spring is expanded approximately 1/32". With this adjustment, the tone arm should be resting against the rest post (15), but not tight enough to cause undue slapping as the tone arm returns to the rest post during cycling.

Record Shelf:

1. Rotate the record shelf to the 10" position.

2. Loosen the two hex-head mounting screws that hold the record shelf assembly to the base plate.

3. Place a new record on the ledge of spindle and allow it to rest on the record shelf.

4. Adjust the record shelf until the curvature of the shelf coincides with the curvature of the record. The record should rest on the record shelf ledge by approximately 1/8".

5. Tighten the mounting screws.

Record Push-Off:

1. With the power removed, move the "Off-Man.-Auto.-Rej." control to "Rej." and release.

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2. Rotate the turntable 2 revolutions, by hand. At this point, the push-off actuator is in its most forward position.

3. Loosen the bar locking screw (71A) (Figure 3) slightly.

4. Squeeze the push-off ears of the bars toward each other until the slide plate (27N) (Figure 4) extends beyond the lips of the record shelf (27O) by 1/64" to 1/32".

5. Tighten the push-off bar screw.

Needle Pressure:

The needle pressure should be between 7 and 9 grams. The pressure is adjusted by bending the ear of the tone arm bracket to which the tone arm spring (12) is attached. If the needle pressure is out of tolerance, make the above adjustments gradually and recheck after each change, as a small movement gives a rather large variation in needle pressure.

When making this adjustment, be careful not to bend, or distort, the bracket. If this bracket is deformed, the needle pressure on the last record of a stack will differ from the needle pressure on the first record.

TROUBLES

Tone Arm Does Not Set Down On Record in Proper Position:

1. Clamp screw on trip arm (49) loose:

   (a) See adjustment on "Tone Arm Positioning for 7" - 10" and 12" records".

2. Set-Down selectors bent:

   (a) Straighten the set-down selectors until they are perpendicular to the base plate; then adjust the set-down as described in "Tone Arm Positioning for 7" - 10" and 12" Records .

Tone Arm Moves Vertically but not Horizontally:

1. Spring (51) loose.

2. Spring (67) loose.

Tone Arm Does Not Move Vertically:

1. Vertical timing pull cord and spring loose.

Uneven Turntable Speed (Wows):

1. Dirt under and around the idler wheel assembly.

2. Idler wheel tension spring loose or missing.

3. Flat spot on idler wheel or turntable rim.

4. Loose or worn pulley belt (23).

5. Oil or grease on idler wheel tire, pulley or drive shaft. Remove all dirt and foreign material with carbon tetrachloride.

Continuous Tripping:

1. Slider (56) frozen in "Reject" position.

2. Index spring broken, thus allowing the slider to remain in "Reject".

3. Index lever spring (45) loose or missing. This prevents the index lever (43) from holding the open section of the main cam gear (53) to the turntable hub. If this condition exists, the main cam gear may override its neutral position enough to reengage the turntable, thus starting a new change cycle. Replace spring.

4. Roller on bottom of cam broken off, resulting in the retractable segment on the gear not being reset.

Two Records Drop at Once:

1. Enlarged center hole. An enlarged center hole in the record may cause two records to drop at once.

2. Spindle guide binding in an upward position. If the spindle guide binds in an upward position, more than one record may slip over the step on the spindle.

Records Fail to Drop to the Turntable:

1. Screw (71A) loose, allowing the rear and front push-off bars to slip in relation to each other rather than to actuate the record-dropping mechanism.

2. Roller on top of main gear broken off, thus failing to actuate the push-off actuator.

Tone Arm Fails to Clear Top Record:

1. Tone arm height not adjusted properly. (See "Tone Arm Height Adjustment" and "Vertical Timing").

LUBRICATION

This changer has been well lubricated at time of manufacture and should so remain indefinitely; however, in case of extreme usage, high-operating temperatures, or the replacement of parts, the changer should be cleaned with carbon tetrachloride and lubricated as follows:

Use a good automobile grease on:

1. Between roller and gear surface.

2. Gear teeth and cam surfaces.

3. Top of push-off saddle (30).

4. The four cast lugs on 10" shelf (27O) where pin is inserted and where hold-down pivots (see Figure 4).

5. Points of contact of record shelves where push-off blades ride.

6. Control button fulcrum points (32).

7. End and detent notches of control slider (56).

8. Turntable shaft and upper outside bearing only.

9. Point of shaft and where it rotates in tone arm stanchion.

10. Cam surface of idler-wheel lifter, detent surfaces, guide slots of shifter plate, and extension of idler shaft in contact with lower shifter plate on motor assembly.

11. All other places of friction and slide surfaces.

Parts to be oiled are:

1. Tone arm pivot pin.

2. Spindle where spindle slides in hole in the bridge, and where it engages the upper bearing of turntable.

3. Roller on gear segment.

4. Idler support shaft, idler shaft, slider bar, two shift roller pins under pivot bushing of shifter plate and pulley shaft of motor.

CAUTION: When lubricating the motor, remove the rubber belt and idler wheel. When lubrication is completed, be sure motor shaft and pulley are free from oil and grease. Do not allow any grease to come in contact with the turntable rim. If any grease or oil should come in contact with these parts, clean them with carbon tetrachloride.

PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	79-3926-1	Spindle	39	56-7478	Selector
2	35-2684-1	Tone Arm Shell	40	56-7479	Feeler Spring
3	76-4649	Cartridge	41	56-7494	Selector Hinge
4		Front Retainer Plate	42	56-7493	Index Lever Bushing
5 &			43	56-7492	Index Lever
6		Mounting Screw and Lockwasher	44	56-7495	Selector Hinge Spring
7		Rear Retainer Plate	45	56-4603	Index Lever Spring
8	54-4729	Shock Mount	46	56-4613	Stop Spring
9	56-7402	Shaft and Swivel Mounting Bracket	47	76-5497	Magnetic Index Stop
10	76-2982-3	Vertical Timing Pull Cord	48	56-7491	Trip Receiver
11	56-7408-1	Shoulder Screw	49	76-4204	Trip Arm
12	56-7403	Needle Pressure Screw	49A	54-7613-1	Trip Finger
13	76-5207-1	Shaft and Swivel Assembly	49B	56-4614	Trip Arm Stop
14	56-7011	Shaft and Swivel Mounting Pin	49C		4-40 x 7/16" Adjusting Screw
15	56-6376	Tone Arm Rest	49D&		
16 &			49E		4-40 x 5/16" Mounting Bolt
17	76-5256	Base Plate and Tone Arm - Stanchion Assembly	50	56-7042	Clamp Screw Nut 10-32 x 1" Clamp Screw
18		6" x 5/8" Mounting Screw	51	56-4608	Safety Spring
19		Flat Washer - Motor Mounting Pin	52	56-7023	Horizontal Timing Link
20	56-4926	Mounting Spacer	52A	56-7023	Vertical Timing Link
21	54-4501	Shock Mounting	53	76-3995-2	Cam Gear Assembly
22	35-1430	Motor	54	76-5252	Trip Plate
23	54-7959	Drive Belt	55	1W60977FE7	"E" Washer
24	65-5267	Idler Wheel	56	56-5759-1	Control Slider
25	56-7548	Compression Spring	57	56-5761-1	Bridge
26	54-7385	Turntable	58	56-7508	Spindle Spring
27		10" - 12" Push-Off Cover	59	56-7497	Spacer
27A		7" Push-Off Cover	60	76-5245	Mounting Plate Assembly
27B	54-7941	7" Hold-Down Bumper	61	1W52323FA3	Washer
	56-7309	7" Hold-Down Wire	62	56-7033	Hammer Actuator Spring
27C		Hold-Down Spring	63	76-5324	Hammer
27D	56-7575	7" Push-Off Blade Spring	64	1W52323FA3	Washer
27E	W2510	Ball	65	1W56306FE15	Curved Washer
27F	56-7513	7" Push-Off Blade	66	56-7625	Actuator Spring
27G	56-7412	7" Push-Off Blade Return Spring	67	56-7625	Actuator Spring
27H		7" Record Shelf	68	56-4588	Push-Off Actuator
27I		Mounting Screw	69	56-7501	Detent Roller
27J	56-7701	Pivot Pin	70	56-7500	Selector Lever
27K		Mounting Screw	71	56-4774	Rear Push-Off Bar
27L	56-7322	10" - 12" Hold-Down Spring	72	56-7515	Front Push-Off Bar
27M	54-4592	10" - 12" Hold-Down Bumper	73	56-4599-1	Safety Slider
27N	56-7306	Push-Off Slide Plate	74	56-7507	Push-Off Hanger
27O		10" - 12" Record Shelf	75	56-4600	Return Spring
27P		Mounting Screw	76	76-5323	Horizontal Actuator
28	76-3993-1	Control Button	77	56-7594	Spacer
29	56-7307	Push-Off Rod	78	76-5322	Vertical Actuator
30		Push-Off Saddle	79	56-7503	Actuator Spindle
31	56-4630	Shelf Assembly Spring	80	56-7504	45 RPM Trip Reset Lever
32	56-7510	Fulcrum Plate	81	56-7033-2	Trip Latch Return Spring
	56-4627	Spring Retainer Washer	82	1W60980FE7	"E" Washer
33	56-4628	Ring Spring	83	76-5262	45 RPM Trip Actuator
34		Speed Nut	84	1W60980FE7	"E" Washer
35	56-7509	Control Button Mounting Shaft	85	56-7505	Selector Link Bar
36	42-1873	Tone Arm Output Selector Switch	86	56-7506	Control Link
37	76-5249	Feeler	87		Spring Washer
38	56-7477	Selector Bracket	88	1W60980FE7	"E" Washer

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POLICE ALARM MODEL PR-8

TRADE NAME	Police Alarm, Model PR-8
MANUFACTURER	Radio Apparatus Corp., 310 Fountain Square Theatre Bld., Indianapolis, Indiana
TYPE SET	AC-DC Operated FM Superheterodyne Receiver
TUBES (SIX)	Types 12AT7 FM Converter, 6BJ6 1st FM IF Amp., 6BJ6 2nd FM IF Amp., 19T8 DET-AF Amp., 35B5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.27 Amp. at 117 Volts AC
TUNING RANGE—FREQ. MOD.	152-163MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer parallel with base of dial.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and chassis.

IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistor in series from point A to chassis. The junction of these two resistors is alignment point C as shown on the schematic.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (Grid) of 12AT7 (V1). Low side to chassis.	10.7MC (Unmod.)	Tuning gang fully open	DC Probe to Point (A). Common to chassis.	A1, A2, A3, A4, A5	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum -2 volts reading.
2.	.01MFD	"	"	"	DC Probe to Point (B). Common to Point (C).	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (Grid) of 12AT7 (V1). Low side to chassis.	10.7MC (450KC Sweep)	Tuning gang fully open	Vert. Amp. to Point (A). Low side to chassis.	A1, A2, A3, A4, A5	Disconnect stabilizer capacitor C2. Adjust for maximum amplitude and symmetry as per figure 1.
2.	.01MFD	"	"	"	Vert. Amp. to Point (B). Low side to chassis.	A6	Reconnect capacitor C2. Adjust A6 to place 10.7MC at center of cross-over lines as per figure 2. SLIGHTLY retouch A1 for maximum amplitude and straightness of crossover lines.

RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	Direct	High to antenna terminal marked "1". Low side to terminal marked "2".	162MC (Unmod.)	162MC	DC Probe to Point (A). Common to chassis.	A7, A8	Adjust for maximum deflection.
4.	Direct	"	152MC	152MC	"	L3, L1	Expand or compres "hair pin" for maximum deflection. Repeat steps 3 and 4 until no further improvement can be made.

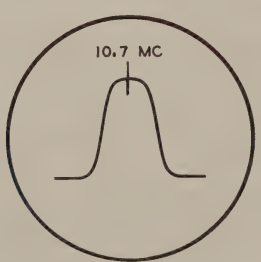

FIG. 1

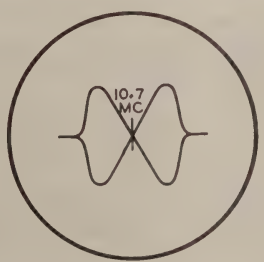

FIG. 2

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

POLICE ALARM
MODEL PR-8

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: POLICE ALARM PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	FM Converter	12AT7	12AT7	9A	
V2	1st FM IF Amp.	6BJ6	6BJ6	7CM	
V3	2nd FM IF Amp.	6BJ6	6BJ6	7CM	
V4	Ratio Det. -AF	19T8	19T8	9E	
V5	Power Output	35B5	35B5	7BZ	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: POLICE ALARM PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	300-061-2	PRS1010D4A		EDL5315C		TVA-3430	Filter-Red
B	30	150							Filter-Blue
C	20	25							Output Cath. Byp. -Yel.
C2	2	50	300-109-1	PRS150/4		BBR2-50		TVA-1301	Stabilizing Cap.
C3	56			GP56M	D6-560	5W5Q5	GP1K-56	1FM-45	Ant. Coupling
C4	5000			GP5000M	D6-502	1D5D5	811-005	29C1	Ant. Isolation
C5	5000			GP5000M	D6-502	1D5D5	811-005	29C1	Conv. Cath. Byp.
C6	270			GP270M	D6-271	5W5T25	GP2K-270	1FM-325	Conv. Fil. Byp.
C7	270			GP270M	D6-271	5W5T25	GP2K-270	1FM-325	Conv. Fil. Byp.
C8	27			GP27M	D6-270	5W5Q3	GP1K-27	MS-43	Osc. Grid Cap.
C9	270			GP270M	D6-271	5W5T25	GP2K-270	1FM-325	Osc. Plate Byp.
C10	5000			GP5000M	D6-502	1D5D5	811-005	29C1	Decoupling
C11	5000			GP5000M	D6-502	1D5D5	811-005	29C1	RF Bypass
C12	5000		*	GP5000M	D6-502	1D5D5	811-005	29C1	1st IF Cath. Byp.
C13	5000			GP5000M	D6-502	1D5D5	811-005	29C1	1st IF Decoup.
C14	5000		†	GP5000M	D6-502	1D5D5	811-005	29C1	2nd IF Cath. Byp.
C15	10000			GP10000M	D6-103	PTE4S1	811-01	36C1	2nd IF Fil. Byp.
C16	10000			GP10000M	D6-103	PTE4S1	811-01	36C1	2nd IF Decoup.
C17A	100		‡	GP100M	D6-101	5W5T1	GP1K-100	1FM-31	Diode Load Cap. §
B	100			GP100M	D6-101	5W5T1	GP1K-100	1FM-31	Diode Load Cap. §
C18	1000			GP1000M	D6-102	1W5D1	GP2L-001	1FM-21	De-emphasis
C19	.01	400		P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C20	470			GP470M	D6-471	5W5T5	GP2K-470	1FM-35	AF Amp. Plate Byp.
C21	.01	400		P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C22	.01	400		P488-01	D6-103	PTE4S1	811-01	TM-11	Output Plate Byp.
C23	270			GP270M	D6-271	5W5T25	GP2K-270	1FM-325	RF Bypass

* Items C12 and R5 are combined into one unit obtainable under MFGR'S Part No 100-229-2.
† Items C14 and R7 are combined into one unit obtainable under MFGR'S Part No. 100-229-2.
‡ Items C17A, C17B and R10 are combined into one unit obtainable under MFGR'S Part No. 100-233-1.
§ When either items C17A or C17B are replaced, replace both with capacitor of equal value.

CONTROLS

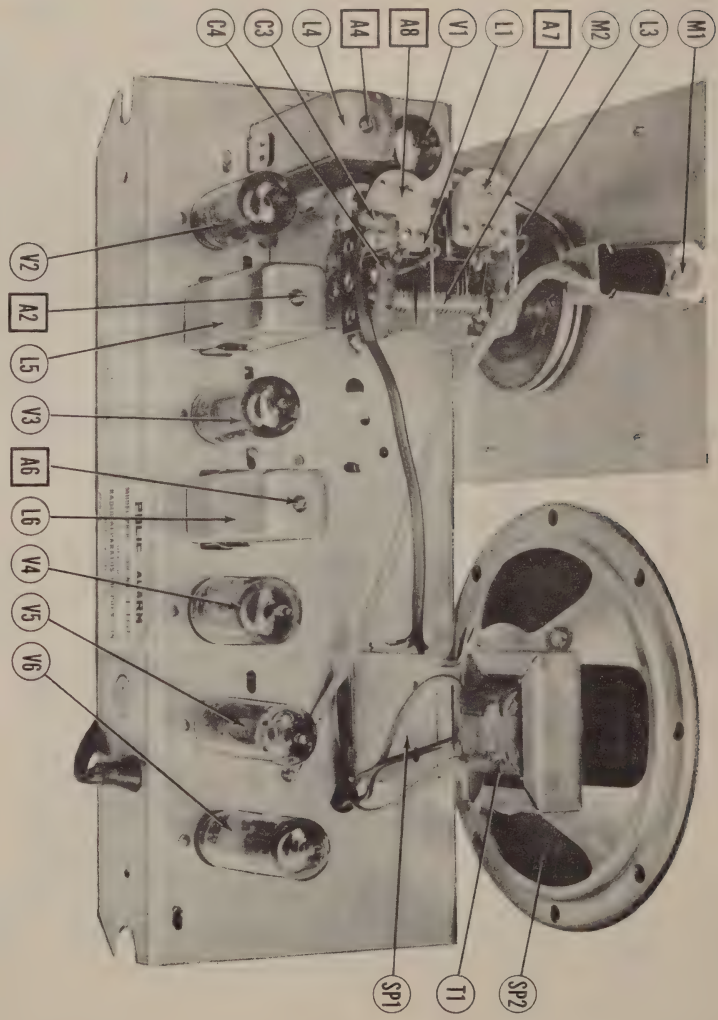
ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Police Alarm PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	100-093-4	Q13-137	AG-63-Z	BSK-70-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: POLICE ALARM PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1000Ω	½		BTS-1000	Converter Cathode
R3	10KΩ	½		BTS-10K	Oscillator Grid
R4	1000Ω	½		BTS-1000	Converter Decoupling
R5	82Ω	½	*		1st IF Cathode
R6	470Ω	½		BTS-470	1st IF Decoupling
R7	82Ω	½	†		2nd IF Cathode
R8	470Ω	½		BTS-470	2nd IF Decoupling
R9	47KΩ	½		BTS-47K	De-emphasis
R10	47KΩ	½	‡	BTS-47K	Ratio Detector Diode Load
R11	10 Meg.	½		BTS-10 Meg.	AF Amp. Grid
R12	220KΩ	½		BTS-220K	AF Amp. Plate Load
R13	470KΩ	½		BTS-470K	Output Grid
R14	150Ω	1		BW-1-150	Output Cathode
R15	1000Ω	1		BTA-1000	Filter

* Items R5 and C12 are combined into one unit obtainable under MFGR'S Part No. 100-229-2.
† Items R7 and C14 are combined into one unit obtainable under MFGR'S Part No. 100-229-2.
‡ Items R10, C17A and C17B are combined into one unit obtainable under MFGR'S Part No. 100-233-1.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Police Alarm	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T1	1900Ω	3.3Ω	210Ω Tap ⓐ 25Ω	.5Ω	Part of SP1	A-3330 ①	A-3031 ①	RO-3 ①	①Bend mounting tabs down and remount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			POLICE ALARM	JENSEN	QUAM	
			PART No.	PART No.	PART No.	
	FIELD	V. C. IMP.		ST-105 ② ④		② Remount output transformer.
SP1	PM	3.3Ω	300-071-2	MOD. P5-X	5A07 ② ③	③ Use universal mounting bracket provided.
	CONE DIA.	V. C. DIA.				④ Fabricate new mounting bracket.
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
				POLICE ALARM	MEISSNER	
		PRI.	SEC.	PART No.	PART No.	
L1	Ant. Coil	0Ω		300-073-3		
L2	Conv. Cath. Choke	.8Ω				Type CLA
L3	Osc. Coil	0Ω		300-073-4		
L4	1st IF	.9Ω	.9Ω	300-077-2	16-3487	
L5	2nd IF	.9Ω	.9Ω	300-077-2	16-3487	
L6	Ratio Det. Trans.	2.5Ω	.2Ω	106-5		

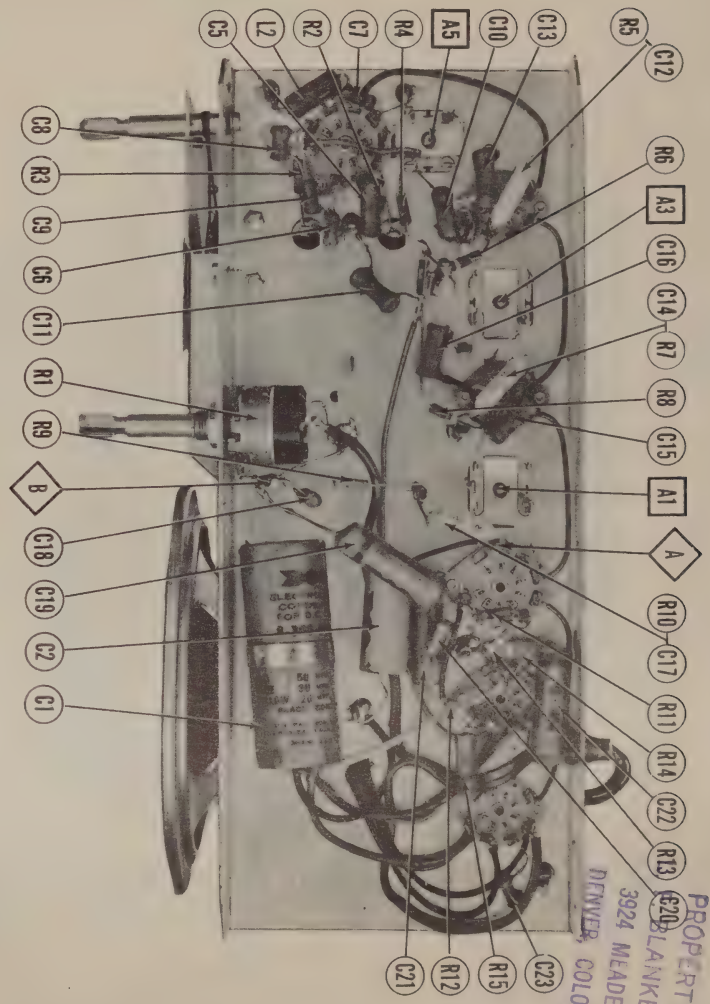
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					POLICE ALARM PART No.		
M1	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	POLICE ALARM PART No.	NOTES
M2	2 Gang Var. Cap.	300-060-5	
	Cabinet	29-9A	
	Dial Window	135	
	Dial Pointer	1774E	
	Knob	200	

CHASSIS—BOTTOM VIEW



PROPERTY OF
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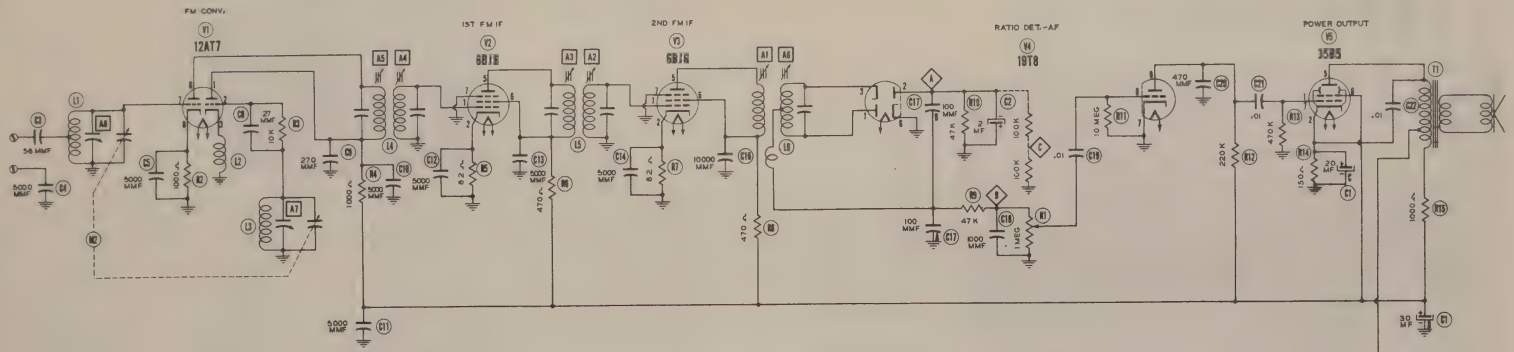
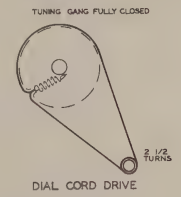
3924 MEADE ST.
DENVER, COLORADO

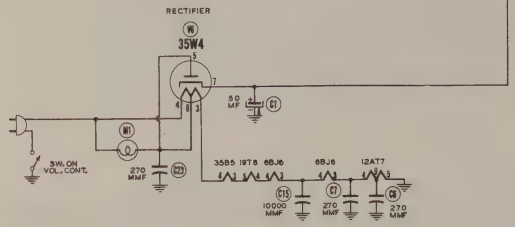
POLICE ALARM
MODEL PR-8





DIAL CORD DRIVE

IF = 10.7 MC



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	90VDC	0-.5VDC	0V.	14VAC	0V.	90VDC	0V.	1.2VDC	7VAC
V 2	6BJ6	0V.	.6VDC	14VAC	21VAC	85VDC	85VDC	0V.		
V 3	6BJ6	0V.	.6VDC	21VAC	28VAC	85VDC	85VDC	0V.		
V 4	1978	-.3VDC	-.7VDC	-.3VDC	98VAC	50VAC	0V.	0V.	-.5VDC	50VDC
V 5	35B5	0V.	4.8VDC	50VAC	83VAC	110VDC	95VDC	0V.		
V 6	35W4	130VDC	0V.	83VAC	117VAC	110VAC	110VAC	130VDC		

† TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	†2000Ω	100Ω	.8Ω	13Ω	0Ω	†2000Ω	0Ω	1000Ω	7Ω
V 2	6BJ6	.9Ω	82Ω	13Ω	20Ω	†1.5KΩ	†1.5KΩ	0Ω		
V 3	6BJ6	.9Ω	82Ω	20Ω	26Ω	†1.5KΩ	†1.5KΩ	0Ω		
V 4	1978	1 Meg.	47KΩ	1 Meg.	26Ω	44Ω	0Ω	0Ω	10 Meg.	†220KΩ
V 5	35B5	470KΩ	150Ω	44Ω	80Ω	†185Ω	†1000Ω	470KΩ		
V 6	35W4	†25Ω	Inf.	80Ω	110Ω	105Ω	105Ω	2.5Meg.		

† MEASURED FROM PIN 7 OF V6.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RCA VICTOR MODEL BX6 (Ch. RC-1082) (BATTERY-LINE OPERATED)

RCA VICTOR MODEL BX6 (Ch. RC-1082) (BATTERY-LINE OPERATED)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

RCA VICTOR MODEL BX6 (Ch. RC-1082) (BATTERY-LINE OPERATED)

RCA VICTOR MODEL BX6

TRADE NAME	RCA Victor, Model BX6 (Ch. RC-1082)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1T4 RF Amp., 1R5 Converter, 1T4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.16 Amp. at 117 Volts AC or 50MA at 9 Volts DC and 12MA at 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer 1/4" to the left of the last reference mark at the low frequency end of dial.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

The "dummy" back cover referred to in step 2 consists of cover with holes provided to permit alignment with the cover in place. If "dummy" backcover is not available, a cover can be made of sheet aluminum. The cover should not touch any portion of the case or chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.005MFD	High side to pin 6 (Grid) of 1R5 (V2). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	REPLACE BOTTOM COVER AND INSTALL CHASSIS IN CABINET. CONNECT LOOP AND BATTERY TO SET. PLACE A "DUMMY" BACK COVER ON REAR OF CASE.						
3.		Loop	1600KC	1400KC	Across voice coil	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	1400KC	1400KC	"	A6, A7	Adjust for maximum output.
5.		Loop	600KC	600KC	"	A8, A9	Adjust alternately while rocking tuning gang for maximum output. Repeat steps 3, 4 and 5 until no further improvement can be made.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

RCA VICTOR MODEL BX6

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	1T4	1T4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amp.	1T4	1T4	6AR	
V4	DET-AVC-AF	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	73113	AF104D328A		UP7DJ1261			▪ Filter
B	20	150							■ Filter
C	160	25							▲ Filament Bypass
D	40	25							Filament Bypass
C2	.05	400	73553	P488-05		PTE4S5		TM-15	AVC Filter
C3	82		71514	GP100M	D6-101	5W5T1	GP1K-100	1FM-31	RF Coupling
C4	.05	100	71551	P288-05		PTE4S5		TM-15	Filament Bypass
C5	.05	100	71551	P288-05		PTE4S5		TM-15	Filament Bypass
C6	.05	400	73553	P488-05		PTE4S5		TM-15	Decoupling
C7	.05	400	73553	P488-05		PTE4S5		TM-15	RF Plate Decoup.
C8	56		71924	GP56M	D6-560	5W5Q5	GP1K-56	1FM-45	Osc. Grid Cap.
C9	.003	200	73961	P688-003	D6-302	PTE6D3	GP2M-003	TM-23	IF Grid Filter
C10	.05	100	71551	P288-05		PTE4S5		TM-15	Filament Bypass
C11	82		71514	GP100M	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C12	.0025	400	70602	P488-0022	D6-252	PTE6D2	GP2M-0025	TM-22	Vol. Cont. Isolation
C13	.01	100	71923	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C14	.02	100	71928	P488-02		PTE4S2		TM-12	AF Amp. Screen Byp.
C15	.01	100	71923	P488-01	D6-103	PTE4S1	811-01	TM-11	AF Amp. Screen Byp.
C16	270		73922	GP270M	D6-271	5W5T25	GP2K-270	1FM-325	AF Amp. Plate Byp.
C17	.002	200	73750	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Audio Coupling
C18	.005	400	71553	P688-005	D6-502	PTE6D5	811-005	TM-25	Output Plate Byp.
C19	.1	400	70617	P488-1		PTE4P1		72P52	Line Isolation
C20	.047	400	75071	P488-047		PTE4S5		TM-15	Line Filter

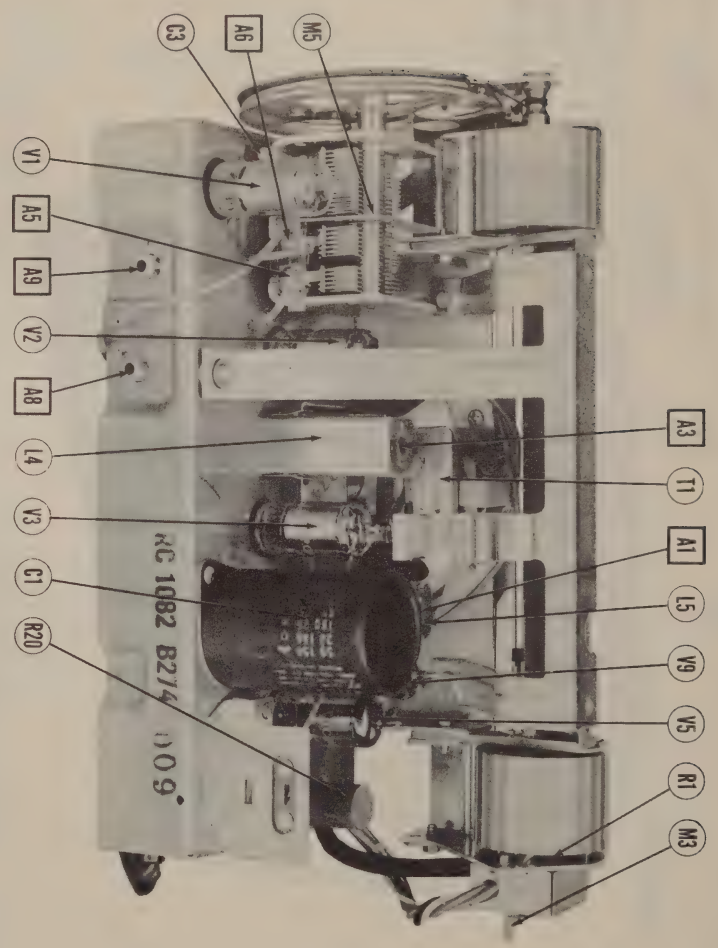
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	71057	Q13-137	AG-63-Z	B-70	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	6.8 Meg.	½		BTS-6.8 Meg.	AVC Network
R3	1.8 Meg.	½		BTS-1.8 Meg.	AVC Network
R4	2700Ω	½		BTS-2700	Filament String
R5	1000Ω	½		BTS-1000	RF Amp. Plate Decoupling
R6	100KΩ	½		BTS-100K	Osc. Grid
R7	3.3 Meg.	½		BTS-3.3 Meg.	AVC Network
R8	1800Ω	½		BTS-1800	Filament String
R9	5.6 Meg.	½		BTS-5.6 Meg.	IF Amp. Grid
R10	68KΩ	½		BTS-68K	Diode Filter
R11	330KΩ	½		BTS-330K	Det. Diode Load
R12	10 Meg.	½		BTS-10 Meg.	AF Amp. Grid
R13	4.7 Meg.	½		BTS-4.7 Meg.	AF Amp. Screen
R14	27KΩ	½		BTS-27K	Screen Dropping
R15	220KΩ	½		BTS-220K	AF Amp. Plate
R16	1 Meg.	½		BTS-1 Meg.	Output Grid
R17	1800Ω	½		BTS-1800	Filament String
R18	1500Ω	½		BTS-1500	Filament String
R19	15KΩ	½		BTS-15K	Filament String
R20	2700Ω	10	74993		Filament Dropping
R21	3300Ω	1		BTA-3300	Filter
R22	33Ω	1	73237		Surge Limiter-Wire Wound

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T1	10KΩ	3.7Ω	400Ω	.4Ω	71047	A-3879	A-2932	RO-16	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			RCA PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.7Ω	73123			
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	RCA PART No.	MEISSNER PART No.
L1	Loop Ant.	3.2Ω		71079	
L2	RF Coil	72Ω	7Ω	74992	
L3	Osc. Coil	2Ω	8.5Ω	73114	14-1060
L4	1st IF	20Ω	20Ω	73129	16-6668
L5	2nd IF	15Ω	15Ω	73037	16-6669

SELENIUM RECTIFIER

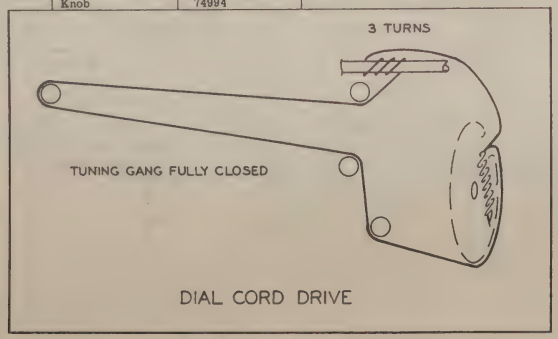
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	RCA PART No.	SYLVANIA PART No.		
M1	.065ADC	74322	NB-5		

BATTERIES

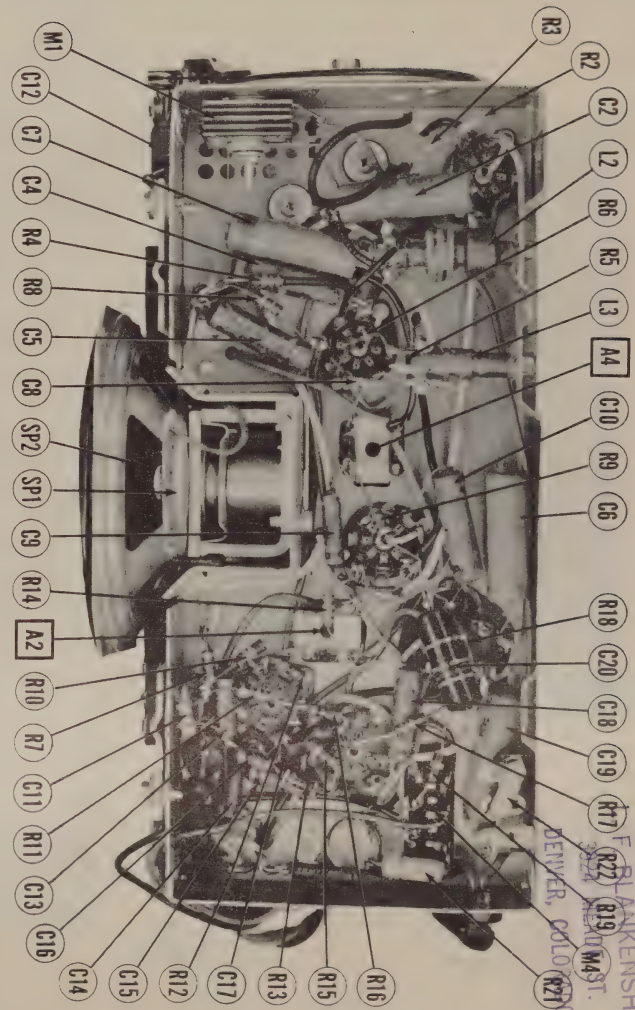
ITEM No.	VOLTAGE	RCA PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V "A" 90V "B"	VS019			753			F6A60	

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M3	Switch	71045	On-Off
M4	Switch	71039	AC/DC-Battery
M5	3 Gang Var. Cap.	74991	(15-525MMF, 13-218MMF, 14-152MMF)
	Dial Scale	74998	
	Dial Pointer	73111	
	Knob	74994	



CHASSIS—TOP VIEW



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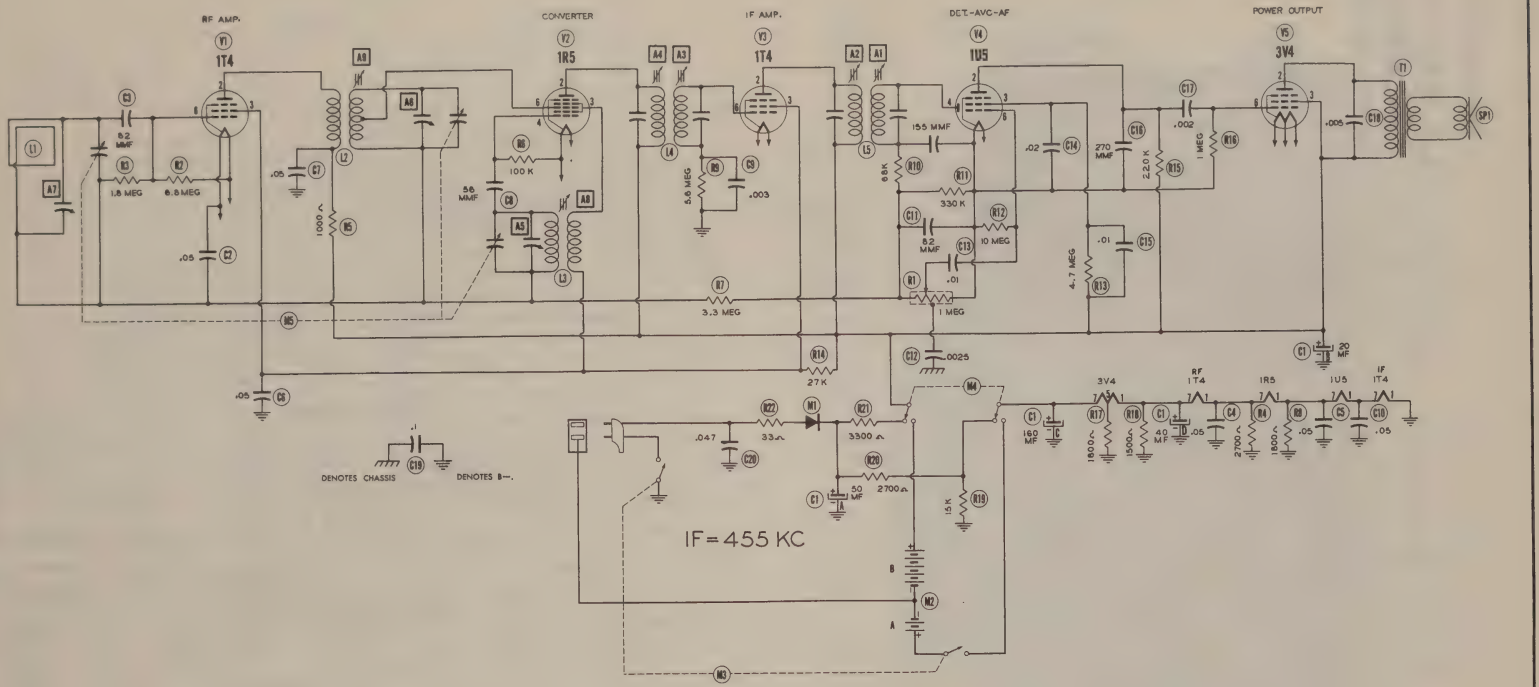
3524 ARETO ST.
DENVER, COLO.

SET 103 FOLDER 13

RCA VICTOR MODEL BX6

RCA VICTOR MODEL BX6



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC/DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	4VDC	90VDC	85VDC	0V.	4VDC	.2VDC	5.2VDC
V 2	1R5	2.6VDC	90VDC	85VDC	5-7.1VDC	2.6VDC	.2VDC	4VDC
V 3	1T4	0V.	90VDC	85VDC	0V.	0V.	0V.	1.3VDC
V 4	1U5	1.3VDC	70VDC	12VDC	.6VDC	0V.	.1VDC	2.6VDC
V 5	3V4	5.2VDC	90VDC	90VDC	0V.	6.6VDC	.3VDC	8VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	*	†4.3KΩ	†30KΩ	Inf.	*	3 Meg.	*
V 2	1R5	*	†3.3KΩ	†30KΩ	100KΩ	*	3.5 Meg.	*
V 3	1T4	*	†3.3KΩ	†30KΩ	Inf.	*	5.8 Meg.	*
V 4	1U5	*	†233KΩ	†4.7 Meg.	320KΩ	Inf.	10 Meg.	*
V 5	3V4	*	†3.7KΩ	†3.3KΩ	Inf.	*	1 Meg.	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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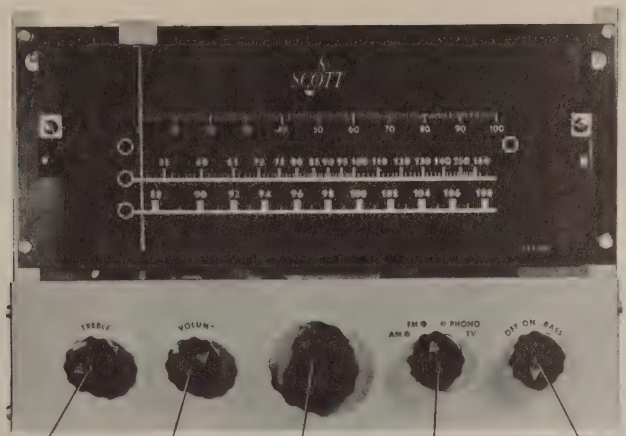
103-13

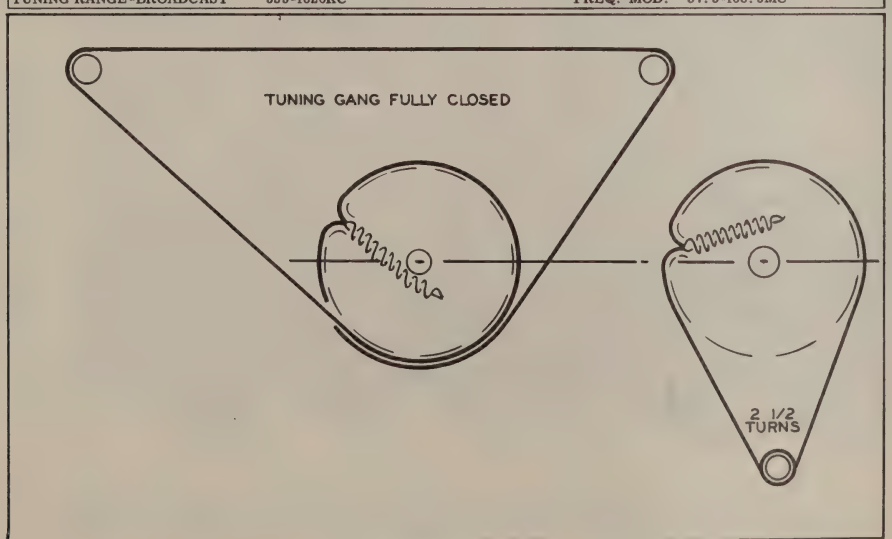
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST
DENVER, COLORADO



SCOTT MODEL 510

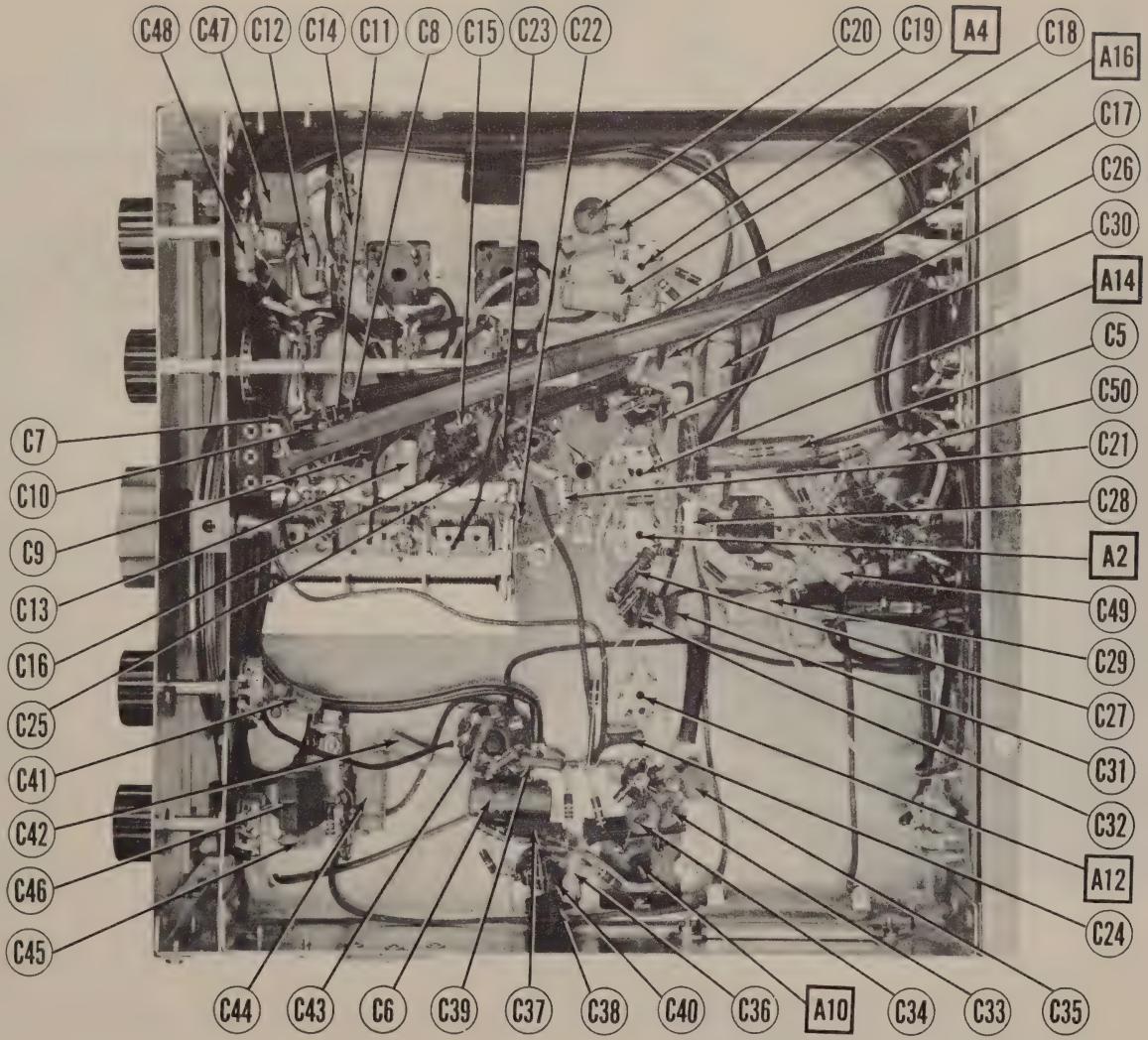
TRADE NAME	Scott, Model 510		
MANUFACTURER	Scott Radio Laboratories Inc., 45-41 Ravenswood Ave., Chicago 40, Illinois		
TYPE SET	AC Operated Phono-AM-FM Superheterodyne Receiver		
TUBES (FOURTEEN)	Types 6BA6 RF Amp., 6BE6 FM Mixer-AM Conv., 6C4 FM Osc., 6BA6 1st FM IF-AM IF, 6AU6 2nd FM IF-AM Det.-AVC, 6AU6 3rd FM IF, 6AL5 Ratio Det., 6SQ7 1st AF Amp., 6SN7 2nd AF-Cathode Follower, 6SN7 Phase Inv., (2) 6L6G Power Output, 25Z6GT Rectifier, 5Y3GT Rectifier		
POWER SUPPLY	110-120 Volts AC	RATING	1.4 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC	FREQ. MOD.	87.5-108.5MC



DIAL CORD DRIVE

SCOTT (E. H.)
MODEL 510

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis 1, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America


C48
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C16
C13
C9
C10
C7

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	FM Mixer-AM Converter	6BE6	6BE6	7CH	
V3	FM Osc.	6C4	6C .	6BG	
V4	1st IF Amp.	6BA6	6BA6	7BK	
V5	2nd FM IF Amp. - AM-DET-AVC	6AU6	6AU6	7BK	
V6	3rd FM IF Amp.	6AU6	6AU6	7BK	
V7	Ratio Det.	6AL5	6AL5	6BT	
V8	1st AF Amp.	6SQ7	6SQ7	8Q	
V9	2nd AF Amp. - Cathode Follower	6SN7	6SN7	8BD	
V10	Phase Inverter	6SN7	6SN7	8BD	
V11	Power Output	6L6G	6L6G	7AC	
V12	Power Output	6L6G	6L6G	7AC	
V13	Rectifier	25Z6GT	25Z6GT	7Q	
V14	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	450	15L3588	AF4444J		UP222245		TVL-75	▲ Filter
B	20	450							■ Filter
C	20	450							▲ Filter
D	20	450							Filter
C2A	60	200	15L3438	AFH1616G		UP8830		TVL-2579	▲ Filter
B	60	200							▲ Filter
C3	25	50	15B638	PRS50/25		BR255A		TVA-15	Output Cath. Byp.
C4A	20	450	15L3588	AF4444J		UP222245		TVL-75	▲ Filter
B	20	450							■ Decoupling
C	20	450							▲ Filter
C5	25	25	15B795	PRS25/25		BR252A		TVA-6	2nd AF Cath. Byp.
C6	5	150	15V4599	PRS150/4		BR415		TVA-60	Stabilizing Cap.
C7	1500		15L3459	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	RF Coup.
C8	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	AVC Filter
C9	.05	200	15S4221	P288-05		PTE4S5		TM-15	AVC Filter
C10	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	RF Cath. Byp.
C11	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	RF Decoupling
C12	.05	400	15L3466	P488-05		PTE4S5		TM-15	RF Decoupling
C13	20		15D3165	C120KNPO	D2-20	5R5Q2	NPOK-20	MS-42	RF Coupling
C14	.05	200	15S4221	P288-05		PTE4S5		TM-15	AVC Filter
C15	51		15L3458	CN5IJNPO	D2-51	5R5Q5	NPOM-50	MS-45	Osc. Grid Cap.
C16	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	Osc. Anode Byp.
C17	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	Conv. Plate Dec.
C18	.05	400	15L3466	P488-05		PTE4S5		TM-15	Conv. Plate Dec.
C19	.05	200	15S4221	P288-05		PTE4S5		TM-15	AVC Filter
C20	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	AVC Filter
C21	51		15L3458	CN5IJNPO	D2-51	5R5Q5	NPOM-50	MS-45	Osc. Grid Cap.
C22	5		15V4678	C15DN750	DN-5		N750K-5		Fixed Trimmer
C23	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	Osc. Plate Bypass
C24	1500		15L3459	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	RF Bypass
C25	5000		15L3462	BPD-5	D6-502	1W5D5	811-005	29C1	Conv. Fil. Byp.
C26	.05	400	15L3466	P488-05		PTE4S5		TM-15	1st IF Decoup.
C27	100		15L3460	GP100M	D6-101	5W5T1	GPIK-100	1FM-31	Diode RF Filter
C28A	100		15D2923	GP100M	D6-101	5W5T1	GPIK-100	1FM-31	Diode RF Filter
B	100			GP100M	D6-101	5W5T1	GPIK-100	1FM-31	Diode RF Filter
C29	.1	200	15S4298	P288-1		PTE4P1		TM-1	AVC Filter
C30	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	1st IF Fil. Byp.
C31	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	2nd IF Fil. Byp.
C32	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	2nd IF Decoupling
C33	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	3rd IF Decoupling
C34	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	3rd IF Cath. Byp.
C35	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	3rd IF Fil. Byp.
C36	390	500	15B799	1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	RF Bypass
C37	390	500	15B799	1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	Diode Load Cap. *

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R38	47KΩ	½	70L3399	BTS-47K	Tone Compensation
R39	22KΩ	½	70L3397	BTS-22K	Tone Compensation
R40	100KΩ	½	70L3401	BTS-100K	2nd AF Amp. Grid
R41	2200Ω	½	70L3432	BTS-2200	2nd AF Amp. Cathode
R42	56Ω	½	70V4628	BW-½-56	Audio Feedback
R43	560Ω	½	70L3527	BTS-560	Audio Feedback
R44	470KΩ	½		BTS-470K	Cathode Follower Grid
R45	1800Ω	1	70V4700	BTA-1800	Cathode Follower Cathode
R46	10KΩ	½	70L3396	BTS-10K	Cathode Follower Cathode
R47	47KΩ	½	70V4662	BTS-47K	2nd AF Amp. Plate
R48	1000Ω	½	70L3393	BTS-1000	2nd AF Amp. Plate Decoupling
R49	750Ω	5	70V4662	AB-750	Filter-Wire Wound
R50	220KΩ	½	70L3403	BTS-220K	3rd AF Amp. Grid
R51	680Ω	½	70V4691	BTS-680	3rd AF Amp. Cathode
R52	10KΩ	1	70L3427	BTA-10K	3rd AF Amp. Cathode
R53	10KΩ	1	70L3427	BTA-10K	3rd AF Amp. Plate
R54	470KΩ	½	70L3404	BTS-470K	Output Grid
R55	170Ω	5	70V4588		Output Cathode-Wire Wound
R56	470Ω	½	70L3404	BTS-470	Output Grid
R57	10Ω	10	70E2630	AB-10	Voice Coil Shunt-See Note-Wire Wound
R58	3900Ω	2	70V4693	BT-2-3900	Filter
R59	375Ω	5	70V4589		Filter-Wire Wound

Note. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC	760VCT	25VAC	5VAC	91V4666			
	ⓐ 1.4A	.137ADC	ⓐ .3A	ⓐ 2A				
		Tap ⓐ		SEC. 4				
		700VCT		6.3VAC				
		.055ADC		ⓐ 6A				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T2	5200Ω CT	7.5Ω	150Ω CT	.4Ω	91V4667	A-8053 ①	A-3131	PCO-80 ①	① Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	7.5Ω	85V4593		12A6C0	
	CONE DIA.	V. C. DIA.				
SP2	11 1/2"	1"				

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ↺)	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
L1	.055A	100Ω	4.4 Henries	17L3312		C-2991 ②	R-650 ①	① Drill new mounting holes. ② Drill one new mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING CAP.	RATING VOLT	SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C38	390	500	15B799	1468-0004 *	D6-391	5W5T4	GP2K-390	1FM-34	Diode Load Cap. *
C39	1500		15L3459	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	De-emphasis
C40	5000		15L3462	BPD-5	D6-502	1D5D5	811-005	29C1	Ratio Det. Fil. Byp.
C41	.02	200	15U4580	P488-02		PTE4S2		TM-12	Audio Coupling
C42	.01	200	15L3563	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C43	100		15L3460	GP100M	D6-101	5W5T1	GP1K-100	1FM-31	1st AF Plate Byp.
C44	.1	400	15V4685	P488-1		PTE4P1		TM-1	Audio Coupling
C45	.01	200	15L3563	P488-01	D6-103	PTE4S1	811-01	TM-11	Tone Compensation
C46	5000	500	15H2603	1467-005	D6-502	1D5D5	811-005	1FM-25	Tone Compensation
C47	4700	500	15H2603	1467-005	D6-502	1D5D5	811-005	1FM-25	Tone Compensation
C48	.02	200	15U4580	P488-02		PTE4S2		TM-12	Tone Compensation
C49	.05	600	15L3467	P688-05		PTE6S5		TM-15	Audio Coupling
C50	.05	400	15L3466	P488-05		PTE4S5		TM-15	Audio Coupling
C51	.05	600	15L3467	P688-05		PTE6S5		TM-15	Audio Coupling
C52	.05	600	15L3467	P688-05		PTE6S5		TM-15	Audio Coupling

* When either items C37 or C38 are replaced, replace both with capacitors of equal value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	SCOTT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	70V4585	Q13-133	AM-60-Z	B-60-S	Bass control and switch
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SW-A	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	70V4583	Q13-133	AM-60-Z	B-60	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R2A per instructions
R3A	500KΩ	½	70V4584	Q11-133	AM-58-S	B-59	Treble control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	SCOTT PART No.	IRC PART No.	IDENTIFICATION CODES
R4	470KΩ	½	70L3404	BTS-470K	RF Grid
R5	100KΩ	½	70L3401	BTS-100K	AVC Network
R6	82Ω	½	70L3391		RF Cathode
R7	1000Ω	½	70L3393	BTS-1000	RF Screen
R8	100KΩ	½	70L3401	BTS-100K	AVC Network
R9	27Ω	½			Parasitic Supp.
R10	22KΩ	½	70L3397	BTS-22K	AM Osc. Grid
R11	3300Ω	½	70L3394	BTS-3300	Conv. Screen
R12	82Ω	½	70L3391		Conv. Cathode
R13	1000Ω	½	70L3393	BTS-1000	Conv. Plate
R14	47KΩ	½	70L3399	BTS-47K	FM Osc. Grid
R15	1000Ω	½	70L3393	BTS-1000	FM Osc. Plate
R16	22KΩ	½	70L3397	BTS-22K	1st IF Transformer Shunt
R17	100KΩ	½	70L3401	BTS-100K	AVC Network
R18	82Ω	½	70L3391		1st IF Cathode
R19	1000Ω	½	70L3393	BTS-1000	1st IF Decoupling
R20	22KΩ	½	70L3397	BTS-22K	2nd IF Transformer Shunt
R21	220KΩ	½	70L3403	BTS-220K	2nd IF Grid
R22	47KΩ	½	70L3399	BTS-47K	Diode Filter
R23	22KΩ	½	70L3397	BTS-22K	Diode Filter
R24	1 Meg.	½	70L3406	BTS-1 Meg.	AVC Network
R25	82Ω	½	70L3391		2nd IF Cathode
R26	3300Ω	½	70L3394	BTS-3300	2nd IF Decoupling
R27	22KΩ	½	70L3397	BTS-22K	3rd IF Transformer Shunt-See Note
R28	82Ω	½	70L3391		3rd IF Cathode
R29	3300Ω	½	70L3394	BTS-3300	3rd IF Decoupling
R30	47Ω	½	70L3429		Balancing
R31	47KΩ	½	70L3399	BTS-47K	De-emphasis
R32	1500Ω	½	70L3525	BTS-1500	Balancing
R33	1500Ω	½	70L3525	BTS-1500	Balancing
R34	8200Ω	½	70L3523	BTS-8200	Ratio Det. Diode Load
R35	8200Ω	½	70L3523	BTS-8200	Ratio Det. Diode Load
R36	4.7 Meg.	½	70L3530	BTS-4.7 Meg.	1st AF Amp. Grid
R37	100KΩ	½	70L3401	BTS-100K	1st AF Amp. Plate

SET 103 FOLDER 14

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SCOTT PART No.	REPLACEMENT DATA MEISSNER PART No.	
L2	FM Ant.	0Ω		20V4625		
L3	RF Choke	.5Ω		17V4668		
L4	FM RF	0Ω		20V4626		
L5	FM Osc.	0Ω		20V4627		
L6	Loop Ant.	2.3Ω		1V4594		
L7	AM RF	125Ω	4.2Ω	20V4620		
L8	AM Osc.	3.7Ω		20V4621		Tap at .3Ω
L9	1st AM IF	15Ω	15Ω	20V4622		
L10	1st FM IF	1.2Ω	1.2Ω	20V4623		
L11	2nd AM IF	15Ω	15Ω	20V4622		
L12	2nd FM IF	1.2Ω	1.2Ω	20V4623		
L13	3rd FM IF	1.2Ω	1.2Ω	20V4623		
L14	Ratio Det. Trans.	1.8Ω	.1Ω	20V4624	17-3487	
L15	Fil. Choke	0Ω		17L3378		
L16	Fil. Choke	0Ω		17L3378		
L17	Fil. Choke	0Ω		17L3378		
L18	Fil. Choke	3Ω				In sets with serial number after 18440

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SCOTT PART No.		NOTES
M1	Bayonet	6-8	.25	Blue	49A168		Type #44
M2	Bayonet	6-8	.25	Blue	49A168		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	SCOTT PART No.	NOTES
M3	Fuse	37A162	3 Amp. 3AG
M4	Switch	89V4630	Selector
M5	3 Gang Var. Cap.	15U4569	(16-512MMF, 33-535MMF, 29-212MMF)
A19	Trimmer	15V4602	FM Osc. Adj.
	Knob	47V4603	Tuning
	Knob	47V4604	Control

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to "0" on the 0-100 reference scale.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to stator an center "AM" section of tuning gang. Low side to chassis.	455KC (400 ∿ Mod.)	AM maximum counter-clock-wise	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V1). Low side to chassis.	600KC	"	600KC	"	A5, A6	"
3.	.01MFD	"	1500KC	"	1500KC	"	A7, A8	Adjust for maximum output. Repeat steps 2 and 3 until no further improvement can be made.
4.		Loop	"	"	"	"	A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to pin 7 (Grid) of 6BE6 (V2). Low side to chassis.	10.7MC (Unmod.)	FM 2nd position clock-wise	Tuning gang fully open	DC Probe to Point (A). Common to chassis.	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum deflection. If any slug requires considerable adjustment, repeat all adjustments.
6.	.01MFD	"	"	"	"	DC Probe to Point (B). Common to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Continue with step 11.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Grid) of 6AU6 (V5). Low side to chassis.	10.7MC (450KC Sweep)	FM 2nd position clock-wise	Tuning gang fully open	Vert. Amp. to Point (A). Low side to chassis.	A10, A11, A12	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per fig 1.
8.	.01MFD	High side to pin 1 (Grid) of 6BA6 (V4). Low side to chassis.	"	"	"	"	A13, A14	"
9.	.01MFD	High side to pin 7 (Grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A15, A16	"
10.	.01MFD	"	"	"	"	Vert. Amp. to Point (B). Low side to chassis.	A17	Reconnect capacitor C6. Adjust A17 so 10.7MC occurs at center of crossover lines as per fig 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	270Ω carbon res.	High side thru 270Ω resistor to ungrounded "FM" antenna terminal. Low side to chassis.	89MC (Unmod.)	FM	89MC	DC Probe to Point (A). Common to chassis.	A18	Adjust for maximum deflection. Attenuate signal generator to maintain a 5 volt reading.
12.	"	"	107MC	"	107MC	"	A19	Adjust for maximum deflection. Repeat steps 11 and 12 until no further improvement can be made.
13.	"	"	89MC	"	89MC	"	L2, L4	Expand or compress coil turns for maximum deflection.
14.	"	"	107MC	"	107MC	"	A20, A21	Adjust for maximum deflection. Repeat steps 13 and 14 until no further improvement can be obtained.

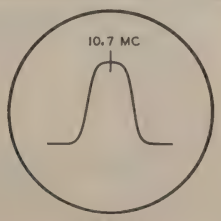


FIG. 1

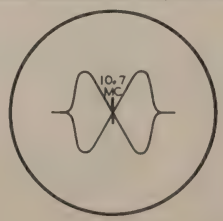
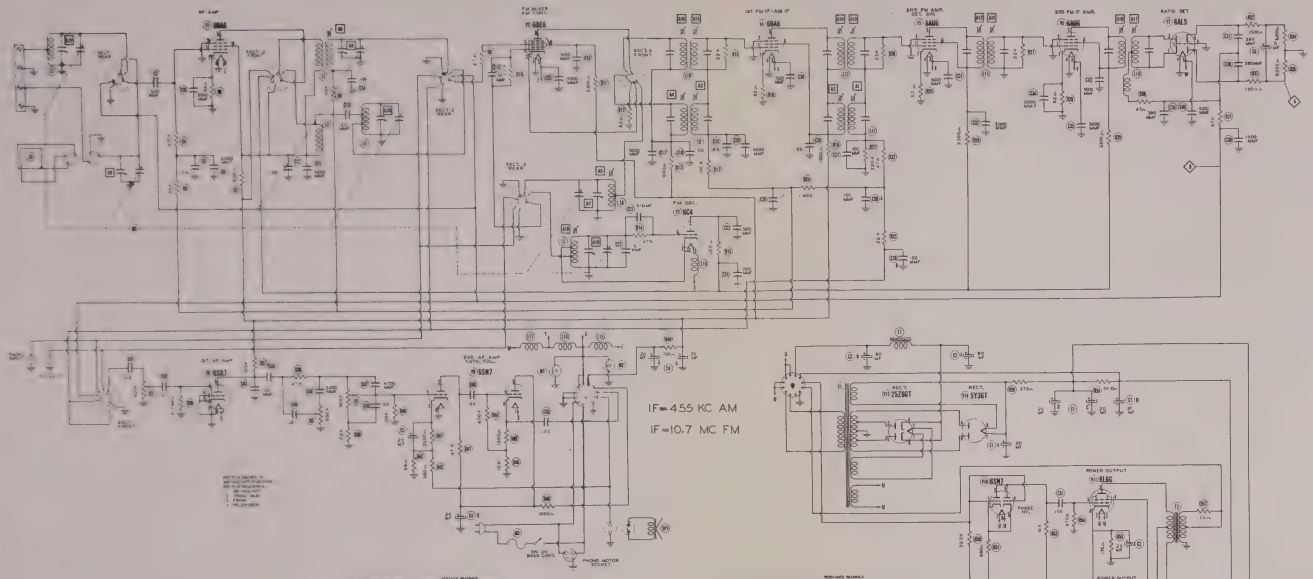


FIG. 2



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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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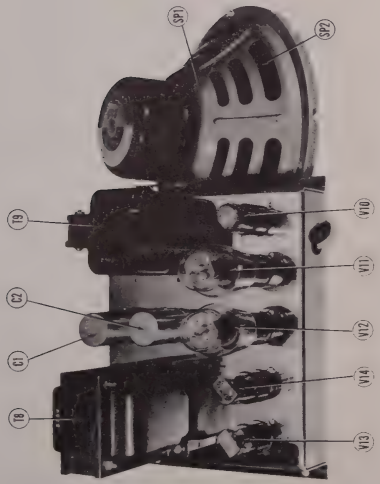

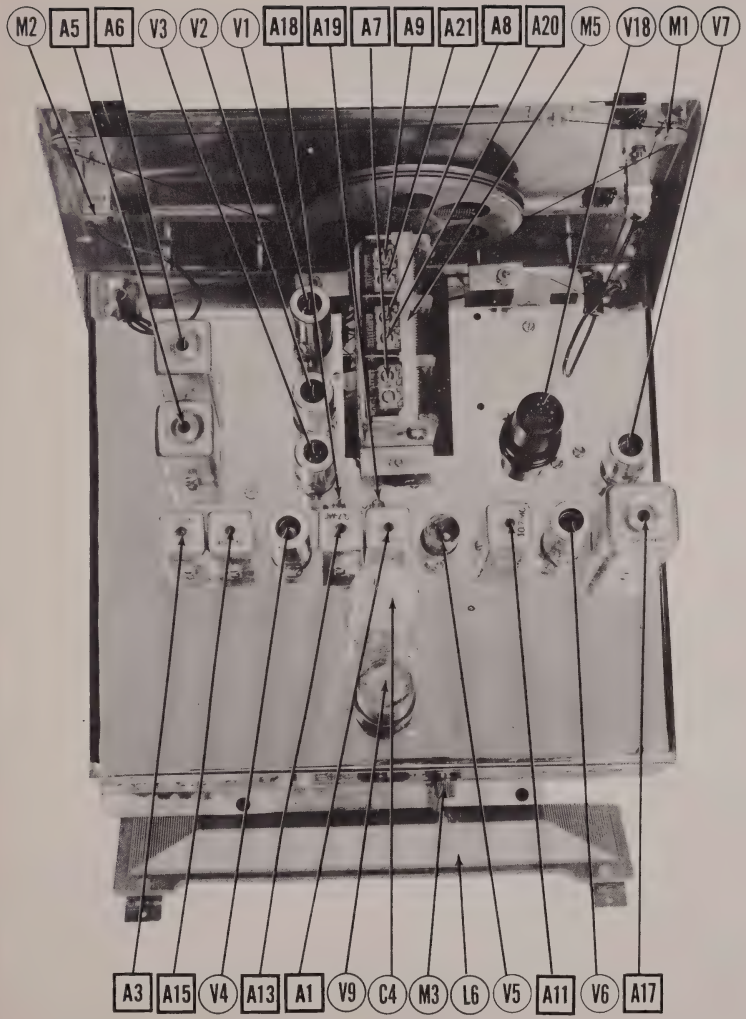

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SENTINEL MODELS
IU312PG, IU312PW, 312PG, 312PW

SENTINEL MODELS
IU312PG, IU312PW, 312PG, 312PW

SENTINEL MODEL IU312PW

TRADE NAME	Sentinel, Models IU312PG, IU312PW, 312PG, 312PW
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster St., Evanston, Illinois
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 4.5 Volts "A" Supply and 90 Volts "B" Supply
RATING	.15 Amp. at 117 Volts AC or 100MA at 4.5 Volts DC and 12MA at 90 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Connect a 1 megohm resistor across antenna terminals.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.2MFD	High side to pin 6 (Grid) of 1R5 (V2). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.2MFD	High side to pin 6 (Grid) of 1U4 (V1). Low side to B-.	1650KC	"	"	A5	Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output	"	A6, A7	Remove 1 megohm resistor and replace set in cabinet. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	600KC	"	"	A8	While rocking tuning gang adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

SENTINEL MODEL 1U312PW

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amp.	1U4	1U4	6AR	
V4	DET-AVC-AF	1U5	1U5	6BW	
V5	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	25E48 *	AF886D4A		UP44415C		TVL-4420	▲ Filter
B	30	150		PRS25/100		10		TVA-1208	■ Filter
C	20	150							▲ Filter
D	100	25							Filament Bypass
C2	20	150	25E55 *	PRS150/20		BR2015A		TVA-1410	Filter
C3	.05	400	23E416	P488-05		PTE4S5		TM-15	AVC Filter
C4	.05	400	23E416	P488-05		PTE4S5		TM-15	AVC Filter
C5	.05	400	23E416	P488-05		PTE4S5		TM-15	AVC Filter
C6	.05	400	23E416	P488-05		PTE4S5		TM-15	Filament Bypass
C7	.05	400	23E416	P488-05		PTE4S5		TM-15	Filament Bypass
C8	5000		23E2025	BPD-5	D6-502	1D5D5	811-005	29C1	RF Bypass
C9	5000		23E2025	BPD-5	D6-502	1D5D5	811-005	29C1	IF Grid Filter
C10A	100		†	GP100M	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
B	100			GP100M	D6-101	5W5T1	GP1K-100	1FM-31	Diode RF Filter
C11	5000		23E2025	BPD-5	D6-502	PTE6D5	811-005	29C1	Audio Coupling
C12A	5000		†	BPD-5	D6-502	PTE6D5	811-005	29C1	AF Amp. Screen
B	100			GP100M	D6-101	5W5T1	GP1K-100	1FM-31	AF Amp. Plate
C	5000			BPD-5	D6-502	PTE6D5	811-005	29C1	Audio Coupling
C13	5000		23E2025	BPD-5	D6-502	PTE6D5	811-005	29C1	Output Plate Bypass
C14	5000		23E2025	BPD-5	D6-502	1D5D5	811-005	29C1	RF Bypass
C15	.05	400	23E416	P488-05		PTE4S5		TM-15	Filament Bypass
C16	.05	400	23E416	P488-05		PTE4S5		TM-15	Line Filter
C17	10		23E2027-5	GP10M	D6-100	5W5Q1	GP1K-10	MS-41	RF Coupling

* Used only in series "A". Series "B" uses 50-50-50MFD 150V. 100MFD 25. (MFGR'S Part No. 25E53 in this application. Model 1U312P uses 50-50-50MFD 150V, 100MFD 25V., MFGR'S Part No, 25E56.
† Items C12A, C12B, C12C, R11A, R11B and R11C are combined into one unit obtainable under MFGR'S Part No. 23E2023-2.
‡ Items C10A, C10B and R9 are combined into one unit obtainable under MFGR'S Part No. 23E2022-2.

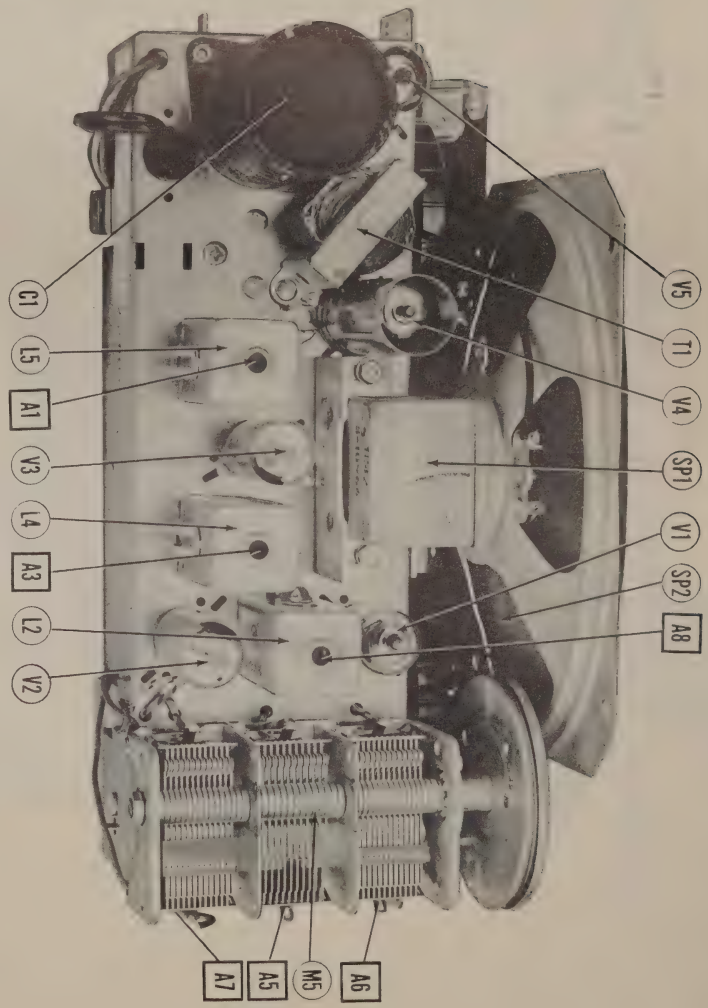
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2 Meg.	½	28E63	Q13-139	AG-66-Z	AN-76	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	K-157	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1 Meg.	½	27E105	BTS-1 Meg.	AVC Network
R3	3.3 Meg.	½	27E335	BTS-3.3 Meg.	AVC Network
R4	3.3 Meg.	½	27E335	BTS-3.3 Meg.	AVC Network
R5	10KΩ	½	27E103	BTS-10K	Conv. Screen
R6	150KΩ	½	27E154	BTS-150K	Osc. Grid
R7	3.3 Meg.	½	27E335	BTS-3.3 Meg.	IF Grid
R8	4.7 Meg.	½	27E475	BTS-4.7 Meg.	AVC Network
R9	47KΩ	½	†	BTS-47K	Diode Filter
R10	3.3 Meg.	½	27E335	BTS-3.3 Meg.	AF Grid
R11A	4.7 Meg.	½	*	BTS-4.7 Meg.	AF Screen
B	1 Meg.	½	*	BTS-1 Meg.	AF Plate
C	2.2 Meg.	½	*	BTS-2.2 Meg.	Output Grid
R12	4.7 Meg.	½	27E475	BTS-4.7 Meg.	Feedback
R13	1500Ω	1	27E152-3	BTA-1500	Filter
R14	470Ω	½	27E471	BTS-470	Bias Network
R15	680Ω	½	27E681	BTS-680	Filament String

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SENTINEL PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
R16	680Ω	½	27E681	BTS-680	Filament String
R17	680Ω	½	27E681	BTS-680	Filament String
R18	390Ω	½	27E391	BW-½-390	Filament String
R19	56Ω	1	27E560-3		Surge Limiter
R20A	1300Ω	6.5	27E1000-6		Filament Dropping-Wire Wound
B	1300Ω	6.5			Filament Dropping-Wire Wound
R21	680KΩ	½	27E684	BTS-680K	Loop Shunt-See Note 1
R22	680KΩ	½	27E684	BTS-680K	RF Transformer Shunt-See Note 1

† Items C10A, C10B, and R9 are combined into one unit obtainable under MFGR'S Part No. 23E2022-2.
* Items C12A, C12B, C12C, R11A, R11B, R11C are combined into one unit obtainable under MFGR'S Part No. 23E2023-2.
Note 1. Not used in all models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA SENTINEL PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	INSTALLATION NOTES
T1	9800Ω	4.5Ω	610Ω	.6Ω	22E50	A-3329	A-2927 ①		① Remove frame and use original.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA SENTINEL PART No.	REPLACEMENT DATA VIKING PART No.	REPLACEMENT DATA QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	4.5Ω	1E42	46J6	46A07 ①	① Use universal mounting bracket provided.
	CONE DIA.	V. C. DIA.				
SP2	4" x 6"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SENTINEL PART No.	REPLACEMENT DATA MEISSNER PART No.	
L1	Loop Ant.	.1Ω	3.5Ω	64E31		
L2	RF Coil	100Ω	4Ω	20E565		
L3	Osc. Coil	1.5Ω	9Ω	20E566	14-1074	
L4	1st IF	27Ω	27Ω	20E463		
L5	2nd IF	27Ω	27Ω	20E463		
L6	RF Coil Assembly			20E611		Includes .05MFD capacitor, not used in all models.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA SENTINEL PART No.	REPLACEMENT DATA SYLVANIA PART No.		NOTES
M1	.065ADC	57E4	NB-5		

BATTERIES

ITEM No.	VOLTAGE	SENTINEL PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	4.5V "A"		736			F3			
M3	90V "B"			490			N60		

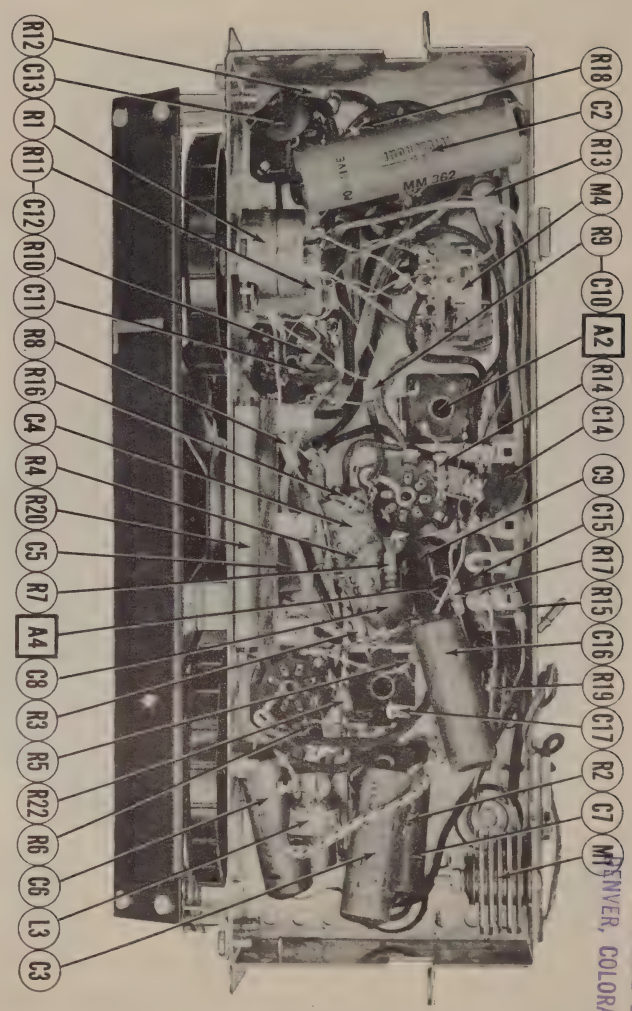
MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M4	Switch	29E20	AC/DC-Battery
M5	3 Gang Var. Cap.	24E54	(25-246MMF, 23-421MMF, 29-158MMF)
	Dial Scale	36E61	
	Dial Pointer	35E28	
	Knob	37E64	Tuning (Brown cabinet)
	Knob	37E64-2	Tuning (Green cabinet)
	Knob	37E66	Off/On-Volume (Brown cabinet)
	Knob	37E66-2	Off/On-Volume (Green cabinet)
	Cabinet	20E570	Brown
	Cabinet	20E570-2	Green

SET 103 FOLDER 15

SENTINEL MODEL 1U312PW

CHASSIS—BOTTOM VIEW



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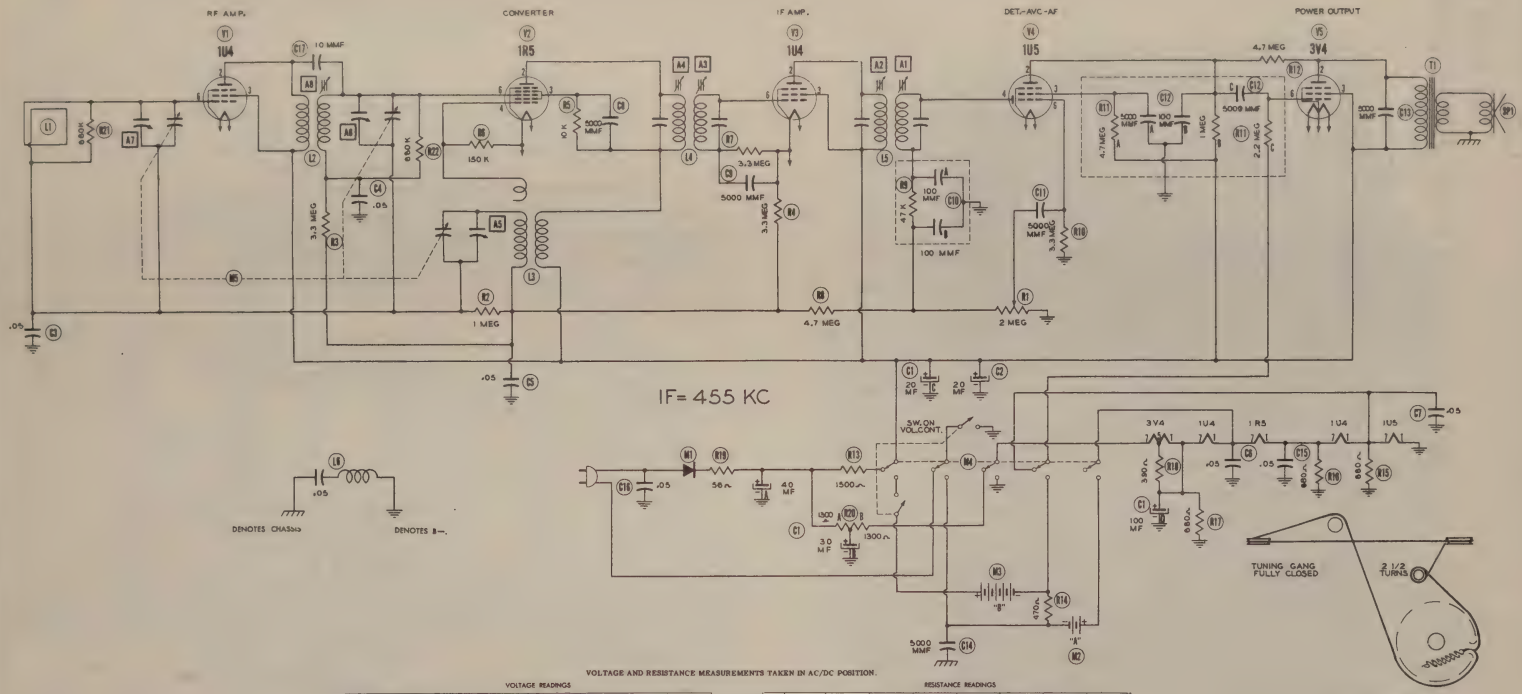

VOLTAGE AND RESISTANCE MEASUREMENTS TAKEN IN AC/DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	2.8VDC	95VDC	95VDC	0V.	2.8VDC	.2VDC	4.4VDC
V 2	1R5	1.4VDC	95VDC	70VDC	8-15VDC	1.4VDC	.2VDC	2.8VDC
V 3	1U4	4.4VDC	95VDC	95VDC	0V.	4.4VDC	.3VDC	5.8VDC
V 4	1U5	0V.	23VDC	64VDC	-.1VDC	0V.	0V.	1.4VDC
V 5	3V4	5.8VDC	90VDC	95VDC	23VDC	.7VDC	.1VDC	8.4VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†1.5KΩ	†1.5KΩ	Inf.	*	3 Meg.	*
V 2	1R5	*	11.5KΩ	†11KΩ	150KΩ	*	5.3 Meg.	*
V 3	1U4	*	11.5KΩ	†1.5KΩ	Inf.	*	3.3 Meg.	*
V 4	1U5	*	†800KΩ	†4.7 Meg	1.7 Meg	Inf.	3.3 Meg.	*
V 5	3V4	*	†2.1KΩ	†1.5KΩ	†800KΩ	*	3.2 Meg.	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF MI.

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103-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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SYLVANIA MODELS 1-250, 1-251, 1-252,
510B, 510H, 510W (Ch. 1-215)

SYLVANIA MODELS 1-250, 1-251, 1-252,
510B, 510H, 510W (Ch. 1-215)

SYLVANIA MODEL 510B

TRADE NAME	Sylvania, Models 1-250, 1-251, 1-252, 510B, 510H, 510W
MANUFACTURER	Sylvania Elect. Prod. Inc., Colonial Radio and Tel. Div., 254 Rand St., Buffalo 7, New York
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .26 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

SYLVANIA MODEL 510B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET.-AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SYLVANIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150	161-2002	PRSA150/40-40		EDL4415		TV-2445	Filter-Red
B	40	150							Filter-Blue
C2	.01	400	162-0411M	P488-01	D6-103	PTE4S1	811-01	TM-11	Tuning Cap. Isolation
C3	100		166-0100P	GP100M	D6-101	5W5T1	GP1K-100	1FM-31	Osc. Grid Cap.
C4	.05	200	162-0615	P288-05		PTE4S5		TM-15	AVC Filter
C5	.0047	400	162-04247	P688-0047	D6-472	PTE6D5	GP2M-0047	TM-25	Audio Coupling
C6	.005	400	162-0625	P688-005	D6-502	PTE6D5	811-005	TM-25	Audio Coupling
C7	.02	400	162-0612	P488-02		PTE4S2		TM-12	Output Plate Bypass
C8	.05	400	162-0615	P488-05		PTE4S5		72P51	Line Isolation
C9	.05	400	162-0615	P488-05		PTE4S5		TM-15	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SYLVANIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	152-0004	Q13-133	AG-60-Z	BSK-60-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

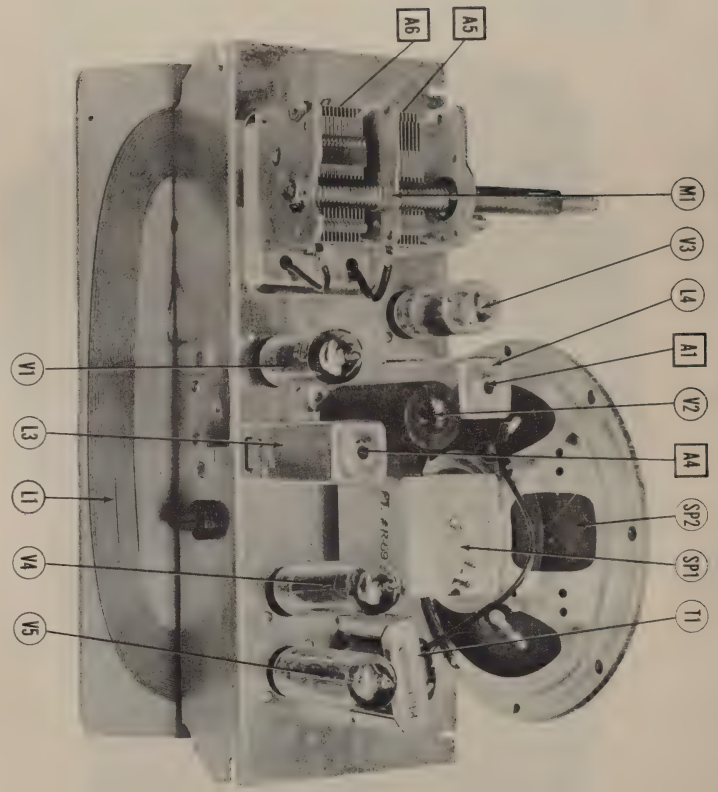
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SYLVANIA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	181-0223	BTS-22K	Osc. Grid
R3	2.2 Meg.	½	181-0225	BTS-2.2 Meg.	AVC Network
R4	47KΩ	½	181-0473	BTS-47K	Diode Filter
R5	10 Meg.	½	181-0106	BTS-10 Meg.	AF Amp. Grid
R6	470KΩ	½	181-0474	BTS-470K	AF Amp. Plate Load
R7	47KΩ	½	181-0473	BTS-47K	Parasitic Suppressor
R8	470KΩ	½	181-0474	BTS-470K	Output Grid
R9	150Ω	½	181-0151	BW-½-150	Output Cathode
R10	1200Ω	1	182-0122	BTA-1200	Filter
R11	25Ω	1	189-0013	BW-1-27	Rectifier Ballast

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	3000Ω	4.4Ω	170Ω	.7Ω	143-0011	A-3332 ①	A-3025 ①	RO-2 ①	① Bend mounting tabs down and remount in original slots. File slots if necessary.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SYLVANIA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105		
SP1	PM	4.4Ω	539-0501	MOD. P5-X	5A07	
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

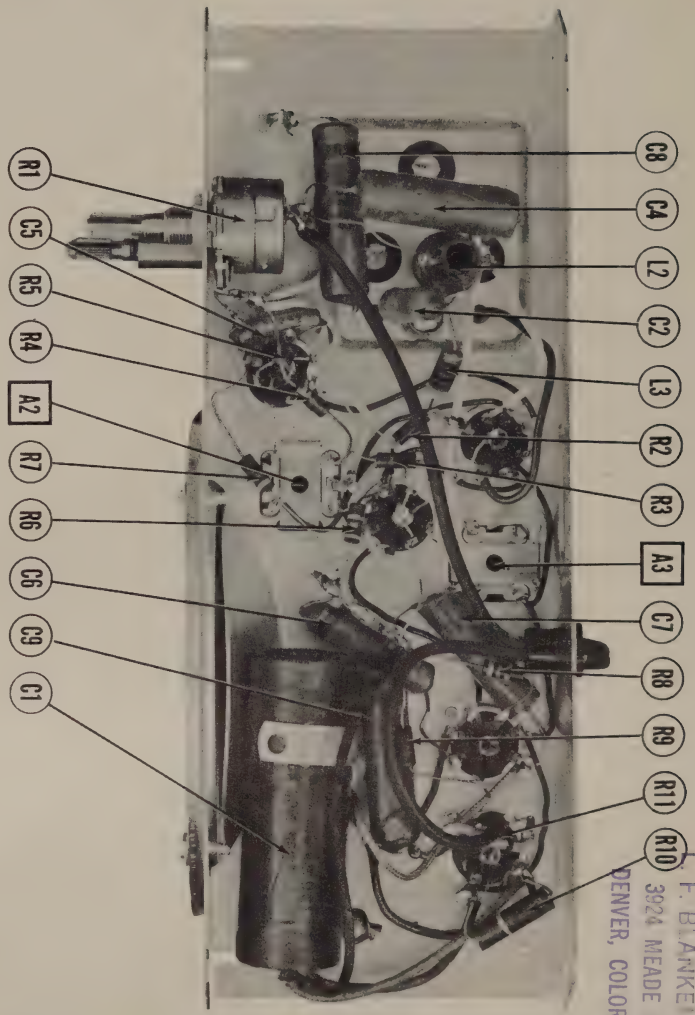
R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA: MEISSNER PART No.	
L1	Loop Ant.	2.3Ω		582-0002		
L2	Osc. Coil	10Ω		113-0015	14-1073	Tap at 1.2Ω
L3	1st IF	24Ω	22Ω	121-0013	16-6758	
L4	2nd IF	18Ω	20Ω	122-0013	16-6758	

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M1	2 Gang Var. Cap.	170-0002	(27-442MMF, 30-180MMF)
	Dial Scale	722-0010	
	Knob	740-0005	Black cabinet
	Knob	740-0007	Walnut cabinet
	Knob	740-0008	Ivory cabinet
	Cabinet	813-0001	Black
	Cabinet	813-0002	Walnut
	Cabinet	813-0003	Ivory

CHASSIS—BOTTOM VIEW



SYLVANIA MODEL 510B
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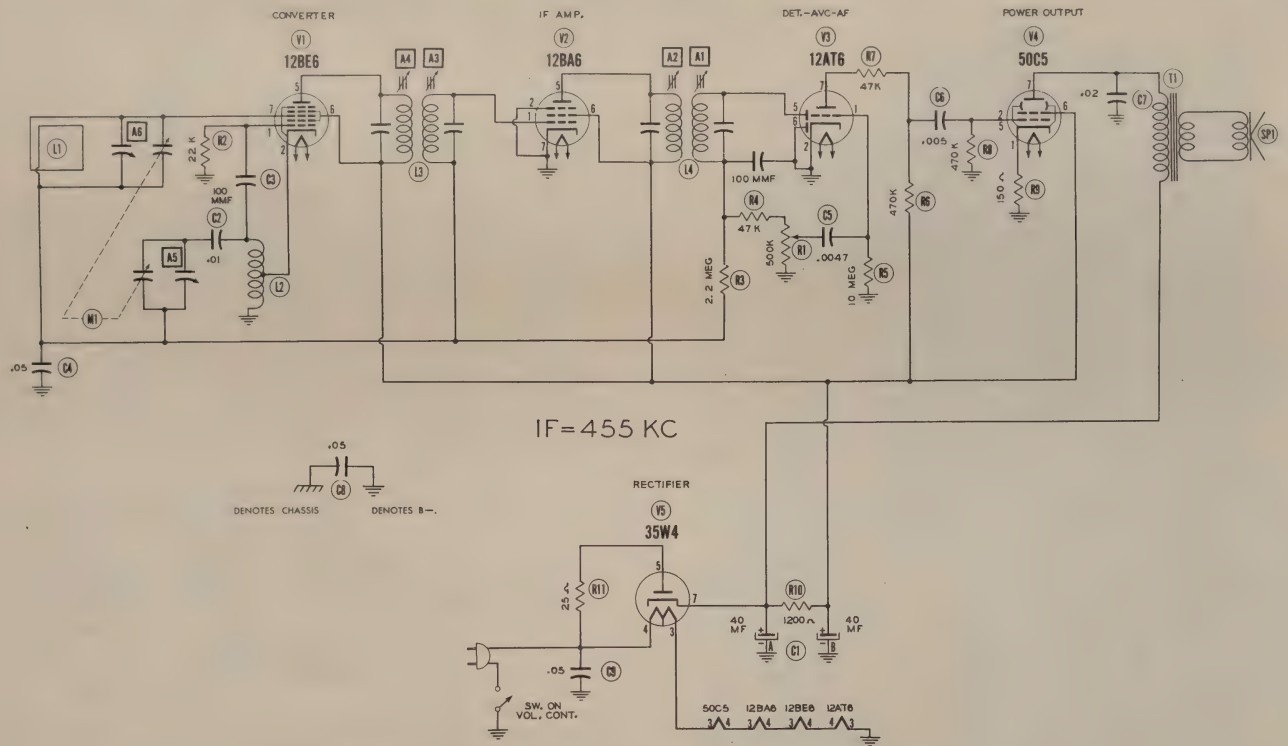
J. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SYLVANIA MODEL 510B



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	‡-9.3VDC	0V.	24VAC	12VAC	90VDC	90VDC	-.5VDC
V 2	12BA6	-.5VDC	0V.	36VAC	24VAC	90VDC	90VDC	0V.
V 3	12AT6	-.6VDC	0V.	0V.	12VAC	-.6VDC	0V.	27VDC
V 4	50C5	5.5VDC	0V.	86VAC	36VAC	0V.	90VDC	110VDC
V 5	35W4	90VDC	0V.	86VAC	117VAC	114VAC	110VAC	120VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1.2Ω	26Ω	13Ω	†1.2KΩ	†1.2KΩ	2.7 Meg.
V 2	12BA6	2.7 Meg.	0Ω	39Ω	26Ω	†1.2KΩ	†1.2KΩ	0Ω
V 3	12AT6	10 Meg.	0Ω	0Ω	13Ω	550KΩ	0Ω	†515KΩ
V 4	50C5	150Ω	470KΩ	90Ω	39Ω	470KΩ	†1.2KΩ	†170Ω
V 5	35W4	†1.2KΩ	Inf.	90Ω	125Ω	150Ω	115Ω	45KΩ

† MEASURED FROM PIN 7 OF V5.

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A PHOTOFACT STANDARD NOTATION SCHEMATIC

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103-16

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

WESTINGHOUSE MODELS H-617T12, H-618T16, H-619T12, U, H-620K16 (CH. V-2150-176, U, V-2150-186)

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3924 MEADE ST.
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MODEL H-619T12

WESTINGHOUSE MODELS H-617T12, H-618T16, H-619T12, U, H-620K16 (CH. V-2150-176, U, V-2150-186)

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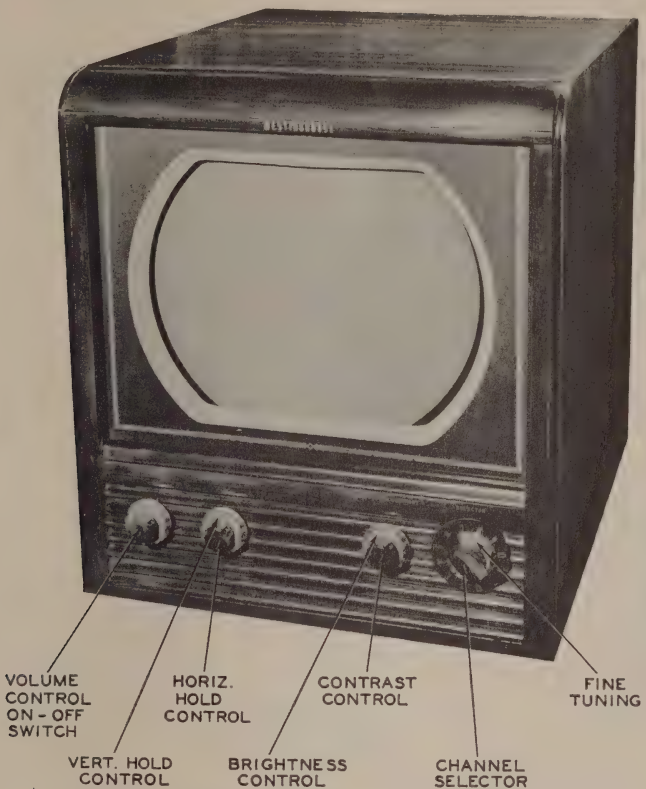

WESTINGHOUSE MODEL H-619T12

TRADE NAME	Westinghouse, Models H-617T12 (Ch. V-2150-176), H-618T16 (Ch. V-2150-186), H-619T12 (Ch. V-2150-176), H-619T12U (Ch. V-2150-176U), H-620K16 (Ch. V-2150-186)
MANUFACTURER	Westinghouse Electric Corp., Receiver Div., Sunbury, Pa.
TYPE SET	Television Receiver
TUBES	Twenty - Five (Ch. V-2150-176, U) Twenty - Six (Ch. V-2150-186)
POWER SUPPLY	110 - 120 Volts AC - 60 Cycles RATING 1.8 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

INDEX

Alignment Instructions 6
Block Diagram 13
Horizontal Sweep Circuit Adjustments 10
Parts List and Description 14, 15, 16
Photos
Cabinet - Rear View 10
Capacitor Identification 11, 18
Chassis - Top View 3, 10
Photos (Continued)
RF Tuner 7
Resitor Identification 12, 17
Trans., Inductor and Alignment Identification 4, 9
Schematic 2
Tube Placement Chart 5
Voltage and Resistance Measurements 8

WESTINGHOUSE MODELS H-617T12, H-618T16, H-619T12, U, H-620K16 (Ch. V-2150-176, U, V-2150-186)

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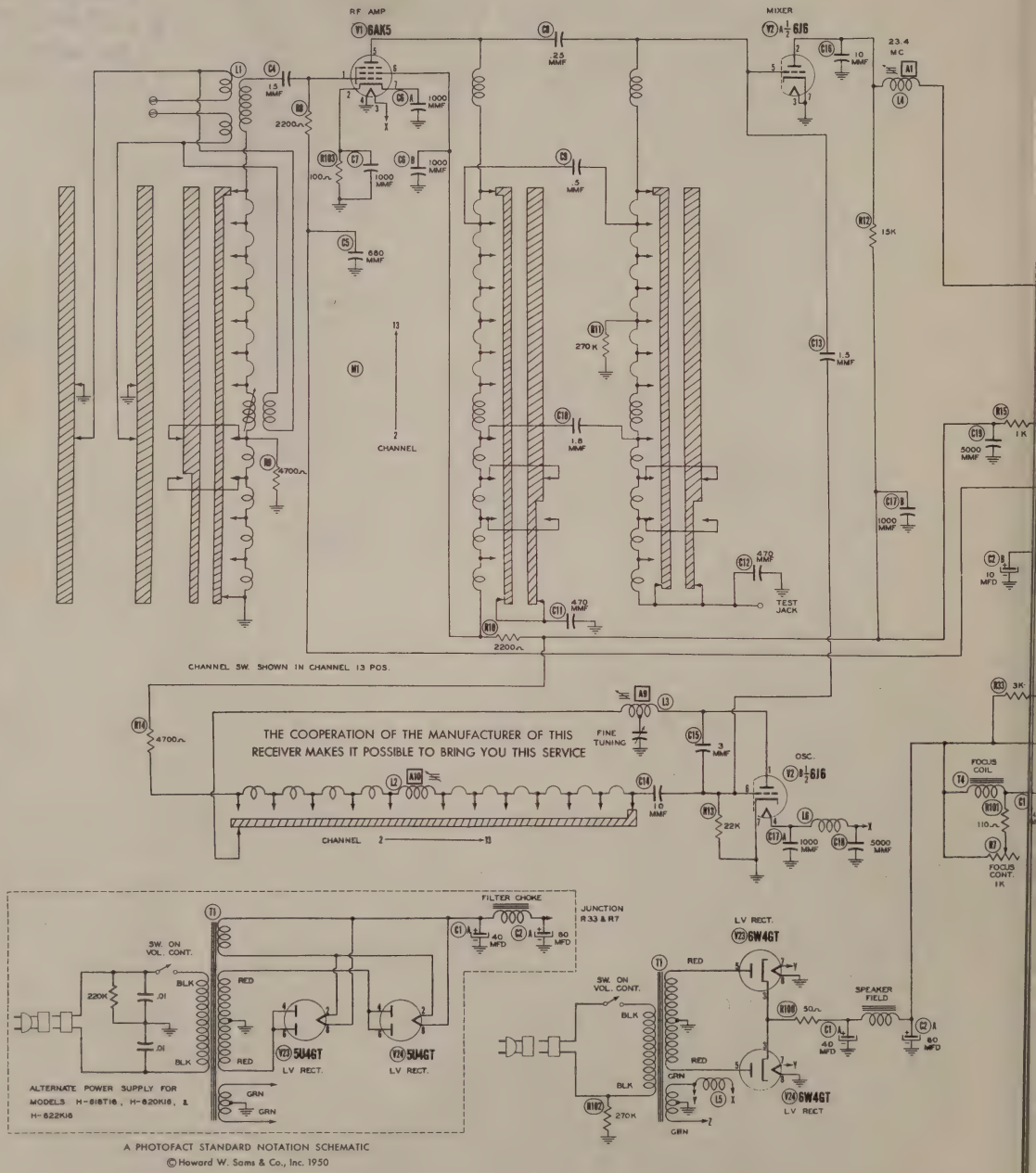

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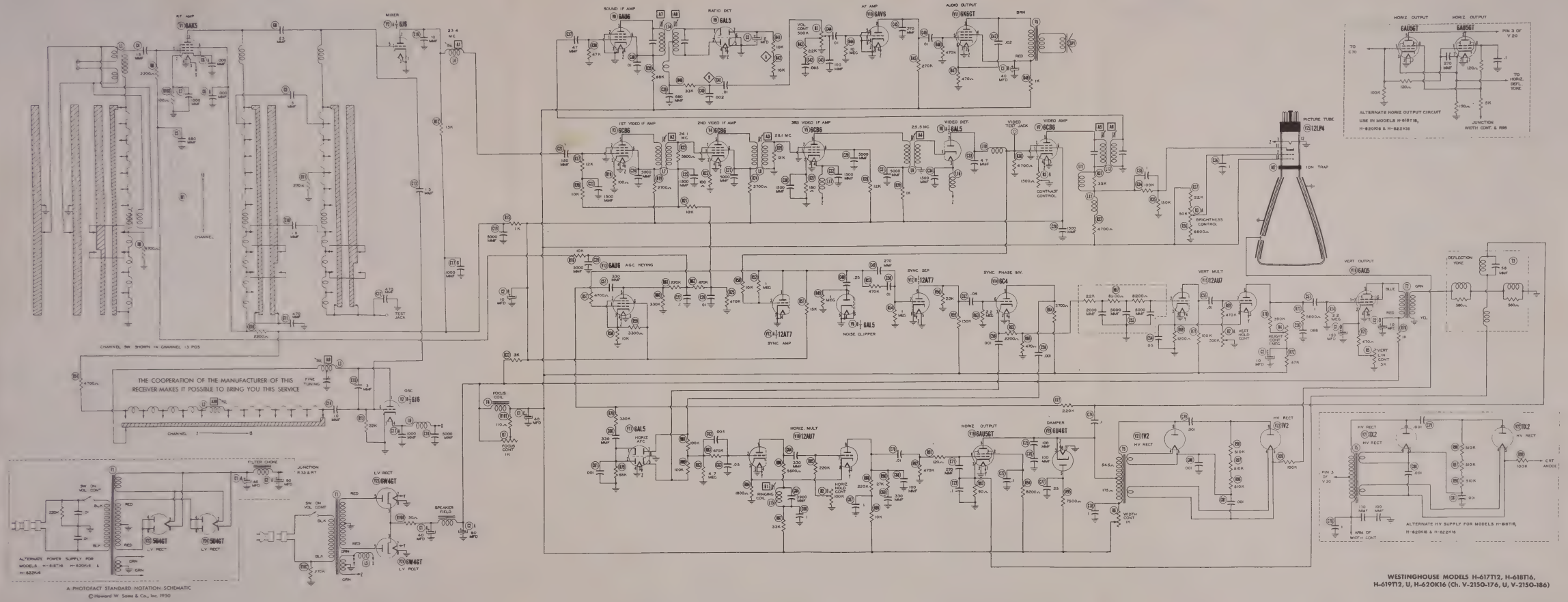
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CHANNEL SW SHOWN IN CHANNEL 13 POS
ALTERNATE POWER SUPPLY FOR MODELS H-618T16 H-620K16 & H-622K16
ALTERNATE HORIZ OUTPUT CIRCUIT USE IN MODELS H-618T16, H-622K16 & H-622K16
ALTERNATE HV SUPPLY FOR MODELS H-618T16, H-620K16 & H-622K16
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WESTINGHOUSE MODELS H-617T12, H-618T16, H-619T12, U, H-620K16 (Ch. V-2150-176, U, V-2150-186)

WESTINGHOUSE MODELS H-617T12, H-618T16, H-619T12, U, H-620K16 (Ch. V-2150-176, U, V-2150-186)

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BLOCK DIAGRAM

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AK5	6AK5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6CB6	6CB6	7CM	
V4	2nd Video IF	6CB6	6CB6	7CM	
V5	3rd Video IF	6CB6	6CB6	7CM	
V6	Video Det. -Noise Clipper	6AL5	6AL5	6BT	
V7	Video Amp.	6CB6	6CB6	7CM	
V8	Sound IF	6AU6	6AU6	7BK	
V9	Ratio Det.	6AL5	6AL5	6BT	
V10	AF Amp.	6AV6	6AV6	7BT	
V11	Audio Output	6K6GT	6K6GT	7S	
V12	Sync. Amp. -Sync. Sep.	12AT7	12AT7	9A	
V13	AGC Keying	6AU6	6AU6	7BK	
V14	Sync. Phase Inv.	6C4	6C4	6BG	
V15	Vert. Mult.	12AU7	12AU7	9A	
V16	Vert. Output	6AQ5	6AQ5	7BZ	
V17	Hor. AFC	6AL5	6AL5	6BT	
V18	Hor. Mult.	12AU7	12AU7	9A	
V19	Hor. Output	6AU5GT	6AU5GT	6CK	2 used in Ch. V-2150-186
V20A	Damper	6U4GT	6U4GT	4CG	
B	Damper	6W4GT	6W4GT	4CG	Alternate
V21A	HV Rect.	1V2	1V2	9U	Ch. V-2150-176
B	HV Rect.	1X2	1X2	7CB	Ch. V-2150-176U and V-2150-186
V22A	HV Rect.	1V2	1V2	9U	Ch. V-2150-176
B	HV Rect.	1X2	1X2	7CB	Ch. V-2150-176U and V-2150-186
V23A	LV Rect.	6W4GT	6W4GT	4CG	
B	LV Rect.	6U4GT	6U4GT	4CG	
C	LV Rect.	5U4G	5U4G	5T	Ch. V-2150-186 only
V24A	LV Rect.	6W4GT	6W4GT	4CG	
B	LV Rect.	6U4GT	6U4GT	4CG	
C	LV Rect.	5U4G	5U4G	5T	Ch. V-2150-186 only
V25A	Picture Tube	12LP4A	12LP4A	12D	Ch. V-2150-176 and V-2150-176U
B	Picture Tube	16RP4	16RP4	12D	Ch. V-2150-186

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	350	V-6509	AFH888H30B		UP4445		TVL-409	▬ Filter
B	40	350				BRH5015			■ Output Decoup.
C	40	350							▲ Filter
D	150	50							Vert. Output Cath. Byp.
C2A	80	350	V-5891	AF16222H		UP11DJ1047		TVL-47	▬ Filter
B	10	350						TVA-25	■ Decoupling
C	10	350							▲ Vert. MV Plate Dec.
D	10	350							Vert. Output Decoup.
C3	2	50	V-4880	PRS150/4		BBR2-50		TVA-12	Stabilizing Cap.
C4	15			GP10K	D6-150		GP1K-15		RF Coupling
C5	680			GP680M	D6-681		GP2K-680		AGC Filter
C6A	1000			GP1000M	D6-102		882-2 x 0015	29C7	RF Cathode Bypass
B	1000			GP1000M	D6-102				RF Decoupling
C7	1000						811-001	29C4	RF Cath. Bypass
C8	.25								RF Coupling
C9	5				D2-.5				RF Coupling
C10	1.8								RF Coupling
C11	470			GP470M	D6-471		GP2K-470		RF Plate Decoupling
C12	470			GP470M	D6-471		GP2K-470		RF Bypass
C13	1.5			CI1.5CNPO	D2-1.5		NPOK-1.5		Osc. Coupling
C14	10			CN10DNPO	D2-10		NPOK-10		Osc. Grid Cap.
C15	3			CN3DNPO			NPOK-3		Osc. Feedback
C16	10			CN10DNPO	D2-10		NPOK- 10		Fixed Trimmer
C17A	1000			GP1000M	D6-102		882-2 x 0015	29C7	Conv. Fil. Bypass
B	1000			GP1000M	D6-102				RF Bypass
C18	5000		V-5596	BPD-5	D6-502		811-005	29C1	Filament Bypass
C19	5000		V-5596	BPD-5	D6-502		811-005	29C1	RF Bypass
C20	5000		V-5596	BPD-5	D6-502		811-005	29C1	AGC Filter
C21	150		R5CC21ZY151M	GP150M	D6-151		GP2K-150	1FM-315	IF Coupling
C22	.1	400	RCP10W4104M	P488-1		PTE4P1		TM-1	AGC Filter
C23	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	AGC Filter
C24	5000		V-5596	BPD-5	D6-502	1D5D5	811-005	29C1	1st V. IF Decoupling
C25	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	AGC Filter
C26	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	AGC Filter
C27	5000		V-5596	BPD-5	D6-502	1D5D5	811-005	29C1	2nd V. IF Decoupling
C28	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	RF Bypass
C29	5000		V-5596	BPD-5	D6-502	1D5D5	811-005	29C1	3rd V. IF Screen Byp.
C30	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	3rd V. IF Cath. Byp.
C31	5000		V-5596	BPD-5	D6-502	1D5D5	811-005	29C1	3rd V. IF Plate Dec.
C32	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	3rd V. IF Fil. Byp.
C33	4.7		V-5658-6	GP5K	D2-4.7	5W5V5	NPOK-4.7	MS-55	V. Diode Filter
C34	1500		R5CC26ZY152M	GP1500M	D6-152	1W5D15	GP2L-0015	1FM-215	V. Det. Fil. Byp.
C35	.1	400	RCP10W4104M	P488-1		PTE4P1		TM-1	Video Coupling
C36	.1	400	RCP10W4104M	P488-1		PTE4P1		TM-1	Pic. Tube Grid Byp.
C37	47	500	RCM20B470M	1468-00005	D6-470	5W5Q5	GP1K-47	1FM-45	S. IF Coupling
C38	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	S. IF Decoupling
C39	680	500	RCM20B681M	GP680M	D6-681	1W5T7	GP2K-680	1FM-37	Diode Load Cap.
C40	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	De-emphasis
C41	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C42	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	811-005	TM-25	Tone Comp.
C43	100	500	RCM20B101M	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	RF Bypass
C44	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C45	270	500	RCM20B271M	1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	AF Amp. Plate Bypass
C46	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	811-01	TM-11	Audio Coupling
C47	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2M-002	TM-22	Output Plate Bypass
C48	.25	400	V-6066-4254M	P488-25		GT4P25		TC-2	Sync. Coupling
C49	270	500	RCM20B271M	1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	Sync. Coupling.

CAPACITO

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEM: WESTINGHOUSE PART No.	REPLACEM: AEROVOX PART No.	REPLACEM: CENTRA PART N
C50	.01	400	RCP10W4103M	P488-01	D6-103
C51	330	500	RCM20C331J	1469-00035	D6-331
C52	.05	400	RCP10W4503M	P488-05	
C53A	2000		†	GP2000M	D6-202
B	5000			GP5000M	D6-502
C	5000			GP5000M	D6-502
C54	.05	400	RCP10W4503M	P488-05	
C55	.01	400	V-6023-4103K	P488-01	D6-103
C56	.068	400	V-6023-4683K	P488-068	
C57	.1	400	RCP10W4104M	P488-1	
C58	.001	600	RCP10W6102M	P688-001	D6-102
C59	.001	600	RCP10W6102M	P688-001	D6-102
C60	330	500	RCM20C331J	1469-00035	D6-331
C61	.001	600	RCP10W6102M	P688-001	D6-102
C62	.005	400	RCP10W4502M	P688-005	D6-502
C63	.05	400	RCP10W4503M	P488-05	
C64	330	500	RCM20C331J	1469-00035	D6-331
C65	3900	500	RCM30C392K	1464-004	
C66	.1	400	RCP10W4104M	P488-1	
C67	.1	400	RCP10W4104M	P488-1	
C68	100	500	RCM20B101M	1468-0001	D6-101
C69	330	500	RCM20C331J	1469-00035	D6-331
C70	.01	400	RCP10W4103M	P488-01	D6-103
C71	270	500	RCM20B271M	1468-00025	D6-271
C72	.1	400	RCP10W4104M	P488-1	
C73	.1	400	RCP10W4104M	P488-1	
C74	.1	400	V-6023-4104M	P488-1	
C75	100	1500	V-9176-15101K		
C76	100	1500	V-9176-15101K		
C77	.25	400	RCP10W4254M	P488-25	
C78	.1	400	RCP10W4104M	P488-1	
C79	.001	6000	V-9571-1		
C80	.001	6000	V-9571-1		
C81	.001	6000	V-9571-1		

* Some models used 680MMF in this application.
† Items C53A, C53B, C53C, R67A, R67B and R67C are c

CO

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTING. PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLA PAR
R1A	500KΩ	½	V-6198-4	Q13-133X	T-78
B	Switch		Not Req.	76-1	SW-A
R2A	500KΩ	½		Concentrikit	
B	100KΩ	½	V-9233	Bll-133 *	V-92
C	Shaft End	½		Bll-128 *	
R3A	50KΩ	½		E-202 *	
B	1500Ω	½	V-9235-2		V-92
R4A	1 Meg.	½	V-6462	Qll-137	M-61
B	Shaft		Not Req.	Not Req.	Not R
R5A	5000Ω	½	V-6463	Qll-114	M-19
B	Shaft		Not Req.	Not Req.	Not R
R6	1000Ω	4	V-9612-1		58-10
R7	1000Ω	4	V-9612-1		58-10

* Additional parts to be used with "Concentrikit".
Note 1. Chassis V-2150-176U uses 1 Meg. control part No

R

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: WESTINGHOUSE PART No.	REPLACEMENT DATA: IRC PART No
R8	2200Ω 20%	½		BTS-2200
R9	4700Ω	½		BTS-4700
R10	2200Ω 20%	½		BTS-2200
R11	270KΩ 20%	½		BTS-270K
R12	15KΩ 20%	½		
R13	22KΩ 20%	½		
R14	4700Ω	½		BTS-4700
R15	1000Ω 20%	½	RC20AE102M	BTS-1000
R16	10KΩ 20%	½	RC20AE103M	BTS-10K
R17	12KΩ	½	RC20AE123K	BTS-12K
R18	100Ω	½	RC20AE101K	
R19	2700Ω	½	RC20AE272K	BTS-2700
R20	10KΩ 20%	½	RC20AE103M	BTS-10K
R21	10KΩ 20%	½	RC20AE103M	BTS-10K
R22	5600Ω	½	RC20AE562K	
R23	100Ω	½	RC20AE101K	
R24	2700Ω	½	RC20AE272K	BTS-2700
R25	470KΩ 20%	½	RC20AE474M	BTS-470K
R26	12KΩ	½	RC20AE123K	BTS-12K
R27	180Ω	½	RC20AE181K	
R28	12KΩ	½	RC20AE123K	BTS-12K
R29	1000Ω 20%	½	RC20AE102M	BTS-1000
R30	4700Ω	½	RC20AE472K	BTS-4700
R31	33KΩ	½	RC20AE333K	BTS-33K
R32	4700Ω	1	RC30AE472K	BTA-4700
R33	3000Ω	10	V-9600-5	AB-3000
R34	100KΩ	½	RC20AE104K	BTS-100K
R35	150KΩ	½	RC20AE154K	BTS-150K
R36	6800Ω	½	RC20AE682K	BTS-6800
R37	22KΩ 20%	½	RC20AE223M	BTS-22K
R38	47KΩ	½	RC20AE473K	
R39	68KΩ	1	RC30AE683K	

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DENVER, COLORADO

DESCRIPTIONS

(CONT.)

DATA	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
CORNELL-DUBILIER ART No.			
TE4S1	811-01	TM-11	Sync. Coupling
R5T3	GP2K-330	MS-43	Hor. Feedback
TE4S5		TM-15	Sync. Coupling
TE6D2	GP2M-002	TM-22	Integrator Net.
TE6D5	811-005	TM-25	Integrator Net.
TE6D5	811-005	TM-25	Integrator Net.
TE4S5		TM-15	Vert. MV Cath. Byp.
TE4S1	811-01	TM-11	Vert. MV Feedback
			Vert. Discharge
TE4P1		TM-1	Vert. Sweep Coupling
TE6D1	GP2L-001	TM-22	Hor. Sync. Coupling
TE6D1	GP2L-001	TM-22	Hor. Sync. Coupling
R5T3	GP2K-331	MS-33	Hor. Feedback
TE6D1	GP2L-001	TM-21	Voltage Divider
TE6D5	811-005	TM-25	AFC Filter
TE6S5		TM-15	AFC Filter
R5T3	GP2K-330	MS-33	Hor. MV Feedback
DR5D4		MS-24	Fixed Trimmer
TE4P1		TM-1	Hor. MV Decoupling
TE4P1		TM-1	Hor. MV Decoupling
W5T1	GP1K-100	1FM-31	Hor. Discharge
R5T3	GP2K-330	MS-33	Hor. Discharge *
TE4S1	811-01	TM-11	Hor. Sweep Coup.
5W5T25	GP2K-270	1FM-325	Hor. Output Grid Byp.
PTE4P1		TM-1	Hor. Output Screen Byp.
PTE4P1		TM-1	Hor. Output Cath. Byp.
PTE4P1		TM-1	Hor. Sweep Coupling
			Fixed Trimmer
			Fixed Trimmer
GT4P25		TC-2	Damper Filter
PTE4P1		TM-1	Hor. Output Decoup.
PTE60D1		TVM-216	Voltage Doubler Cap.
PTE60D1		TVM-216	HV Filter
PTE60D1		TVM-216	HV Filter

ed into one unit obtainable under MFGR'S Part No. V-9213.

OLS

CENTRALAB PART No.	INSTALLATION NOTES
BT-66-S	Volume control tapped at 100KΩ
Not Req.	Attach to R1A per instructions
	Vert. hold control-front
SBB-514	Horiz. hold control-rear
	Attach per instructions in "Concentrikit".
	Brightness control-front
SBB-513	Contrast control-rear
AN-69	Height control-See note 1
AK-1	Attach to R4A per instructions
AN-10	Vert. linearity control
AK-1	Attach to R5A per instructions
V-129	Width control-Wire Wound
V-129	Focus control-Wire Wound

13.

TORS

IDENTIFICATION CODES
ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED.
RF Grid
Ant. Coil Shunt-See Note 2
RF Decoupling
Conv. Grid
Conv. Plate
Osc. Grid
Osc. Plate
Decoupling
AGC Network
1st Video IF Grid
1st Video IF Cathode
1st Video IF Decoupling
AGC Network
AGC Network
2nd Video IF Transformer Shunt
2nd Video IF Cathode
2nd Video IF Decoupling
AGC Network
3rd Video IF Transformer Shunt
3rd Video IF Cathode
3rd Video IF Screen
3rd Video IF Plate Decoupling
Video Det. Diode Load
Peaking Coil Shunt
Video Amp. Plate
Decoupling-Wire Wound
Voltage Divider
Picture Tube Cathode
Voltage Divider
Voltage Divider
Sound IF Grid
Sound IF Decoupling

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	WESTINGHOUSE PART No.	IRC PART No.	
R40	33KΩ	½	RC20AE333K	BTS-33K	De-emphasis
R41	10KΩ	½	RC20AE103K	BTS-10K	Ratio Det. Diode Load
R42	10KΩ	½	RC20AE103K	BTS-10K	Ratio Det. Diode Load
R43	22KΩ 20%	½	RC20AE223M	BTS-22K	Tone Compensation
R44	10 Meg. 20%	½	RC20AE106M	BTS-10 Meg.	AF Amp. Grid
R45	270KΩ	½	RC20AE274K	BTS-270K	AF Amp. Plate
R46	470KΩ	½	RC20AE474K	BTS-470K	Output Grid
R47	470Ω	1	RC30AE471K	BTA-470	Output Cathode
R48	1000Ω 20%	1	RC30AE102M	BTA-1000	Output Decoupling
R49	1 Meg.	½	RC20AE105K	BTS-1 Meg.	Noise Clipper Load-See Note 3
R50	10KΩ	½	RC20AE103K	BTS-10K	Isolation
R51	15KΩ	½	RC20AE153K	BTS-15K	Sync. Amp. Plate-See Note 4
R52	1 Meg.	½	RC20AE105K	BTS-1 Meg.	Sync. Amp. Grid
R53	470KΩ	½	RC20AE474K	BTS-470K	Charge Limiting
R54	1 Meg.	½	RC20AE105K	BTS-1 Meg.	Sync. Sep. Grid
R55	150KΩ	½	RC20AE154K	BTS-150K	Sync. Sep. Plate
R56	22KΩ	½	RC20AE223K	BTS-22K	Voltage Divider
R57	4700Ω	½	RC20AE472K	BTS-4700	AGC Keying Grid
R58	10KΩ	2		BT-2-10K	AGC Keying Cathode-See Note 5
R59	3300Ω	1	RC30AE332K	BTA-3300	Voltage Divider-See Note 6
R60	330KΩ 20%	1	RC30AE334K	BTA-330K	Voltage Divider
R61	220KΩ 20%	½	RC20AE224M	BTS-220K	AGC Keying Plate
R62	470KΩ	½	RC20AE474K	BTS-470K	AGC Network
R63	2.2 Meg.	½	RC20AE225K	BTS-2.2 Meg.	Sync. Phase Inv. Grid-See Note 11
R64	2700Ω	½	RC20AE272K	BTS-2700	Sync. Phase Inv. Plate
R65	2200Ω	½	RC20AE222K	BTS-2200	Sync. Phase Inv. Cathode
R66	470Ω	½	RC20AE471K	BTS-470	Sync. Phase Inv. Cathode
R67A	22KΩ	½	†	BTS-22K	Integrator Network
B	8200Ω	½	†	BTS-8200	Integrator Network
C	8200Ω	½	†	BTS-8200	Integrator Network
R68	1200Ω	½	RC20AE122K	BTS-1200	Vert. MV Cathode
R69	470KΩ	½	RC20AE474K	BTS-470K	Vert. MV Grid
R70	390KΩ	½	RC20AE394K	BTS-390K	Vert. MV Plate
R71	100KΩ	½	RC20AE104K	BTS-100K	Vert. MV Plate
R72	47KΩ	½	RC20AE473K	BTS-47K	Vert. MV Plate Decoupling
R73	5600Ω	½	RC20AE562K	BTS-5600	Vert. Peaking-See Note 7
R74	2.2 Meg. 20%	½	RC20AE225M	BTS-2.2 Meg.	Vert. Output Grid
R75	470Ω	½	RC20AE471K	BTS-470	Vert. Output Cathode
R76	1000Ω 20%	½	RC20AE102M	BTS-1000	Vert. Output Decoupling
R77	220KΩ	1	RC30AE224K	BTA-220K	Feedback Network
R78	330KΩ	1	RC30AE334K	BTA-330K	Feedback Network
R79	68KΩ	½	RC20AE683K	BTS-68K	Horiz. AFC Filter Network
R80	100KΩ 5%	½	RC20AE104J	BTS-100K-5%	Horiz. AFC Diode Load
R81	120KΩ 5%	½	RC20AE104J	BTS-100K-5%	Horiz. AFC Diode Load
R82	4.7 Meg. 20%	½	RC20AE475M	BTS-4.7 Meg.	Horiz. AFC Diode Load
R83	470KΩ	½	RC20AE474K	BTS-470K	Horiz. AFC Filter Network
R84	1800Ω	½	RC20AE182K	BTS-1800	Horiz. MV Cathode
R85	220KΩ 5%	½	RC20AE224J	BTS-220K-5%	Horiz. MV Grid
R86	5600Ω	½	RC20AE562K	BTS-5600	Horiz. MV Plate
R87	33KΩ	½	RC20AE333K	BTS-33K	Horiz. MV Plate Decoupling
R88	220KΩ	½	RC20AE224K	BTS-220K	Horiz. MV Plate
R89	10KΩ	½	RC20AE103K	BTS-10K	Horiz. MV Plate Decoupling
R90	27KΩ	½	RC20AE273K	BTS-27K	Horiz. Peaking-See Note 8
R91	120Ω 20%	½	RC20AE121M		Parasitic Supp.
R92	470KΩ 20%	½	RC20AE474M	BTS-470K	Horiz. Output Grid
R93	91Ω	2	V-9002-4900K		Horiz. Output Cathode- Wire Wound
R94	8200Ω	2	V-9002-4822K	BT-2-8200	Horiz. Output Screen-Wire Wound
R95	7500Ω	10	V-9600-3		Damper Filter-Wire Wound
R96	510KΩ 5%	1	V-9016-2514J		HV Rect. Load
R97	510KΩ 5%	1	V-9016-2514J		HV Rect. Load
R98	510KΩ 5%	1	V-9016-2514J		HV Rect. Load
R99	100KΩ 20%	½	RC20AE104M		HV Filter
R100	50Ω	10	V6597		Surge Limiter-Wire Wound
R101	190Ω	3	V-5134		Focus Coil Shunt-Wire Wound-See Note 10
R102	270KΩ 20%	½	RC20AE274M	BTS-270K	Line Filter-See Note 9
R103	100Ω	½	RC20AE100K		RF Amp. Cathode

† Items C53A, C53B, C53C, R67A, R67B, and R67C are combined into one unit obtainable under MFGR'S Part No. V-9213.

Note 2. Not used in all models.
Note 3. Some models use 3.9 Meg. resistor in this application.
Note 4. Some models use 22KΩ resistor in this application.
Note 5. Some models use 47KΩ resistor in this application.
Note 6. Some models use 10KΩ, 1 watt resistor in this application.
Note 7. Some models use 4700Ω resistor in this application.
Note 8. Some models use 15KΩ resistor in this application.
Note 9. Used in chassis V-2150-176U only.
Note 10. Some models use 110Ω resistor in this application.
Note 11. Some models use 1 Meg. resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	WESTINGHOUSE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1A	117VAC @ 1.8A	620VCT .250ADC	12.6VCT @ 5.5A		V-9723			
B					V-9780 ④			

④ Used in chassis V-2150-186.

WESTINGHOUSE MODELS H-617T12, H-618T16, H-619T12, U, H-620K16 (Ch. V-2150-176, U, V-2150-186)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING		REPLACEMENT DATA				NOTES
	DC RESISTANCE		WESTINGHOUSE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.					
T2	650Ω	8.7Ω	V-9584-1	A-8113	A-3036	TSO-5 ①	Vert. Output Trans.
T3A	37Ω		V-9210-2	DY-7	MD-3		Hor. Deflection Coil
B	68Ω						Vert. Deflection Coil
T4	250Ω		V-9590-2				Focus Coil
T5A	720Ω	0Ω	V-9572-1 ②				HV Trans.
	Tap ⓐ	SEC. 2					
	175Ω	0Ω					
B			V-9759 ③ ④				HV Trans.

① Drill one new mounting hole.
② Used in chassis V-2150-176.
③ Used in chassis V-2150-176U.
④ Used in chassis V-2150-186.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		WESTING. PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6A	7100Ω	3.8Ω	485Ω	.7Ω	V-9238 ②	A-3878	A-2931	RO-13	② Used in chassis V-2150-176
B					V-9814 ③				③ Used in chassis V-2150-176U
C					V-9807 ④				④ Used in chassis V-2150-186

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	WESTINGHOUSE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	68Ω	3.8Ω	V-9236-2		4E68S	Models H-617T12, H-619T12, U
B			V-9770			Model H-620K16
C			V-6555-2			Model H-618T16
	CONE DIA.	V. C. DIA.				
SP2A	4"	9/16"				
B	9 7/8"					
C						

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	WESTINGHOUSE PART No.	MEISSNER PART No.	
L1	Ant. Coil	0Ω	0Ω			Part of tuner V-9502-1
L2	Osc. Coil	.1Ω				Channel 6 part of tuner V-9502-1
L3	Osc. Coil	.1Ω				Channel 13 part of tuner V-9502-1
L4	1st Video IF	.6Ω				Part of tuner V-9502-1
L5	Fil. Choke	.1Ω				Part of tuner V-9502-1
L6	Fil. Choke	.9Ω		V-9099-1		
L7A	2nd Video IF	1Ω	1Ω	V-9586-1		
B	2nd Video IF			V-9798		Chassis V-2150-176U and V-2150-186
L8A	3rd Video IF	1Ω	1Ω	V-9586-1		
B	3rd Video IF			V-9798		Chassis V-2150-176U and V-2150-186
L9A	4th Video IF	1Ω	1Ω	V-9582-2		
B	4th Video IF			V-9798		Chassis V-2150-176U and V-2150-186
L10	Peaking	4.9Ω		V-5902-4		
L11	Peaking	6Ω		V-5902-1		
L12	Peaking	6Ω		V-5902-1		
L13	Sound IF	2.7Ω	2.7Ω	V-9371		
L14	Ratio Det. Trans.	7Ω	.8Ω	V-9574		
L15	Ringing	110Ω		V-6764		
L16	Fil. Choke	1.9Ω		V-9099-2		
L17	Fil. Choke	.9Ω		V-9099-1		

MISCELLANEOUS

ITEM No.	PART NAME	WESTINGHOUSE PART No.	NOTES
M1A	RF Tuner	V-9502-1	
B	RF Tuner	V-8210	
M2	Ion Trap	V-6573-3	
	Antenna Assembly	V-9366-2	Built-In Antenna
	Knob	V-6146-1	Contrast, Horiz. Hold
	Knob	V-9104-1	Brightness, Vert. Hold
	Knob	V-9104-3	Volume, Off-On (Rear)
	Knob	V-6146-5	Volume, Off-On (Front)
	Knob	V-9104-4	Fine Tuning
	Knob	V-6284-6	Channel Selector
	Knob	V-5100-1	Antenna
	Safety Glass	V-6288-10	

PROPERTY OF
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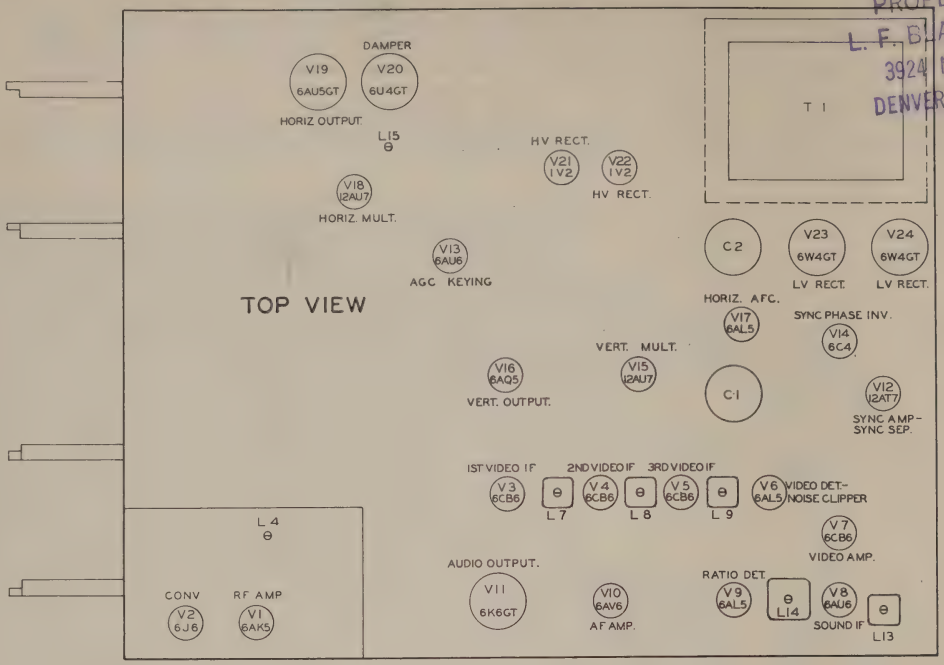
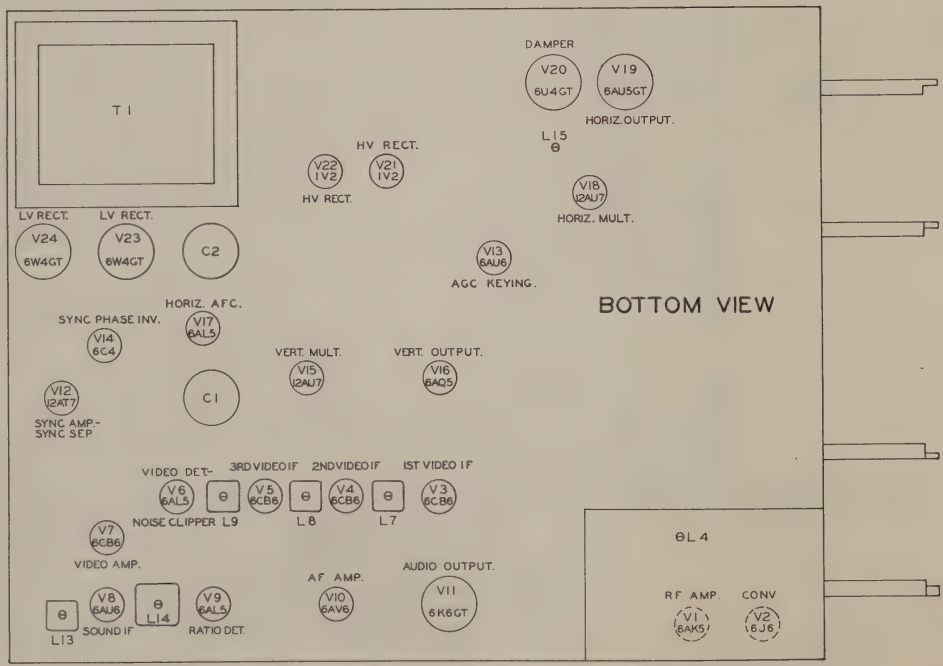
DENVER, COLORADO





TUBE PLACEMENT CHART

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	.3VDC	1VDC	6.3VAC	0V.	85VDC	85VDC	1VDC		
V 2	6J6	80VDC	80VDC	0V.	6.3VAC	-14VDC	§-6.4VDC	0V.		
V 3	6CB6	.1VDC	1.1VDC	6.3VAC	0V.	100VDC	100VDC	0V.		
V 4	6CB6	.1VDC	1VDC	6.3VAC	0V.	100VDC	100VDC	0V.		
V 5	6CB6	0V.	1.4VDC	0V.	6.3VAC	125VDC	107VDC	0V.		
V 6	6AL5	0V.	-1.2VDC	6.3VAC	0V.	0V.	0V.	-.5VDC		
V 7	6CB6	-.4VDC	2.5VDC	0V.	6.3VAC	280VDC	130VDC	0V.		
V 8	6AU6	-.9VDC	0V.	0V.	6.3VAC	55VDC	55VDC	0V:		
V 9	6AL5	-.3VDC	-.3VDC	6.3VAC	0V.	0V:	0V.	-.3VDC		
V 10	6AV6	-.6VDC	0V.	0V.	6.3VAC	0V.	0V.	105VDC		
V 11	6K6GT	0V.	6.3VAC	240VDC	250VDC	0V.	0V.	0V.	15VDC	
V 12	12AT7	65VDC	-.2VDC	0V.	0V:	0V.	36VDC	-1.6VDC	0V.	6.3VAC
V 13	6AU6	65VDC	100VDC	0V.	6.3VAC	-.1VDC	130VDC	100VDC		
V 14	6C4	270VDC	0V.	0V.	6.3VAC	270VDC	0V.	12VDC		
V 15	12AU7	60VDC	1.8VDC	3.3VDC	6.3VAC	6.3VAC	110VDC 65VDC	23VDC	3.3VDC	0V.
V 16	6AQ5	.1VDC	36VDC 12VDC	6.3VAC	0V.	300VDC	300VDC	.1VDC		
V 17	6AL5	0V.	0V.	6.3VAC	0V.	3.6VDC	0V.	-2.9VDC		
V 18	12AU7	155VDC	.2VDC	8VDC	6.3VAC	6.3VAC	95VDC	-2.6VDC	8VDC	0V.
V 19	6AU5GT	-12VDC	0V.	9.1VDC	0V.	*	0V.	6.3VAC	205VDC	
V 20	6U4GT	0V.	0V.	*	0V.	60VDC	0V.	0V.	6.3VAC	
V 21	1V2	* DO NOT MEASURE.								
V 22	1V2	* DO NOT MEASURE.								
V 23	6W4GT	0V.	0V.	360VDC	0V.	320VAC	0V.	6.3VAC	0V.	
V 24	6W4GT	0V.	0V.	360VDC	0V.	320VAC	0V.	6.3VAC	0V.	
V 25	12LP4A	6.3VAC	30VDC	PIN 10 305VDC 300VDC	PIN 11 175VDC	PIN 12 0V.				

§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AK5	380KΩ	100Ω	.1Ω	0Ω	†6.5KΩ	†6.5KΩ	100Ω		
V 2	6J6	†9KΩ	†19KΩ	0Ω	.1Ω	270KΩ	22KΩ	0Ω		
V 3	6CB6	340KΩ	100Ω	.1Ω	0Ω	†6KΩ	†6KΩ	0Ω		
V 4	6CB6	320KΩ	100Ω	.1Ω	0Ω	†6KΩ	†6KΩ	0Ω		
V 5	6CB6	1Ω	180Ω	0Ω	.1Ω	†4.3KΩ	†15KΩ	0Ω		
V 6	6AL5	.1Ω	1 Meg.	.1Ω	0Ω	0Ω	0Ω	4.7KΩ		
V 7	6CB6	4.7KΩ	1.5KΩ	0Ω	.1Ω	†5.4KΩ	†3.3KΩ	0Ω		
V 8	6AU6	47KΩ	0Ω	0Ω	.1Ω	†70KΩ	†70KΩ	0Ω		
V 9	6AL5	Inf.	Inf.	.1Ω	0Ω	0Ω	0Ω	20KΩ		
V 10	6AV6	10 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	†270KΩ		
V 11	6K6GT	0Ω	.1Ω	†2KΩ	†1.5KΩ	470KΩ	Inf.	0Ω	470Ω	
V 12	12AT7	†18KΩ	14KΩ	0Ω	0Ω	0Ω	22KΩ	1 Meg.	0Ω	.1Ω
V 13	6AU6	†25KΩ	9KΩ	0Ω	.1Ω	300KΩ	†3.3KΩ	9KΩ		
V 14	6C4	†3KΩ	Inf.	0Ω	.1Ω	†3KΩ	2.2 Meg.	2.2KΩ		
V 15	12AU7	†100KΩ	39KΩ	1.2KΩ	.1Ω	.1Ω	†420KΩ †1.4Meg.	470KΩ	1.2KΩ	0Ω
V 16	6AQ5	2.2 Meg.	5.4KΩ 470Ω	.1Ω	0Ω	†1.7KΩ	†1.7KΩ	2.2 Meg.		
V 17	6AL5	68KΩ	68KΩ	.1Ω	0Ω	4.8 Meg.	0Ω	4.8 Meg.		
V 18	12AU7	†40KΩ	5.1 Meg.	1.8KΩ	.1Ω	.1Ω	†240KΩ	220KΩ	1.8KΩ	0Ω
V 19	6AU5GT	470KΩ	0Ω	90Ω	Inf.	†380Ω	Inf.	.1Ω	†8.5KΩ	
V 20	6U4GT	Inf.	Inf.	†380Ω	Inf.	†8KΩ	Inf.	0Ω	.1Ω	
V 21	1V2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	†880Ω
V 22	1V2	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.
V 23	6W4GT	Inf.	Inf.	10KΩ	Inf.	38Ω	Inf.	.1Ω	0Ω	
V 24	6W4GT	Inf.	Inf.	10KΩ	Inf.	38Ω	Inf.	.1Ω	0Ω	
V 25	12LP4A	.1Ω	6.8KΩ	PIN 10 †230Ω †330Ω	PIN 11 70KΩ	PIN 12 0Ω				

† MEASURED FROM PIN 3 OF V23.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

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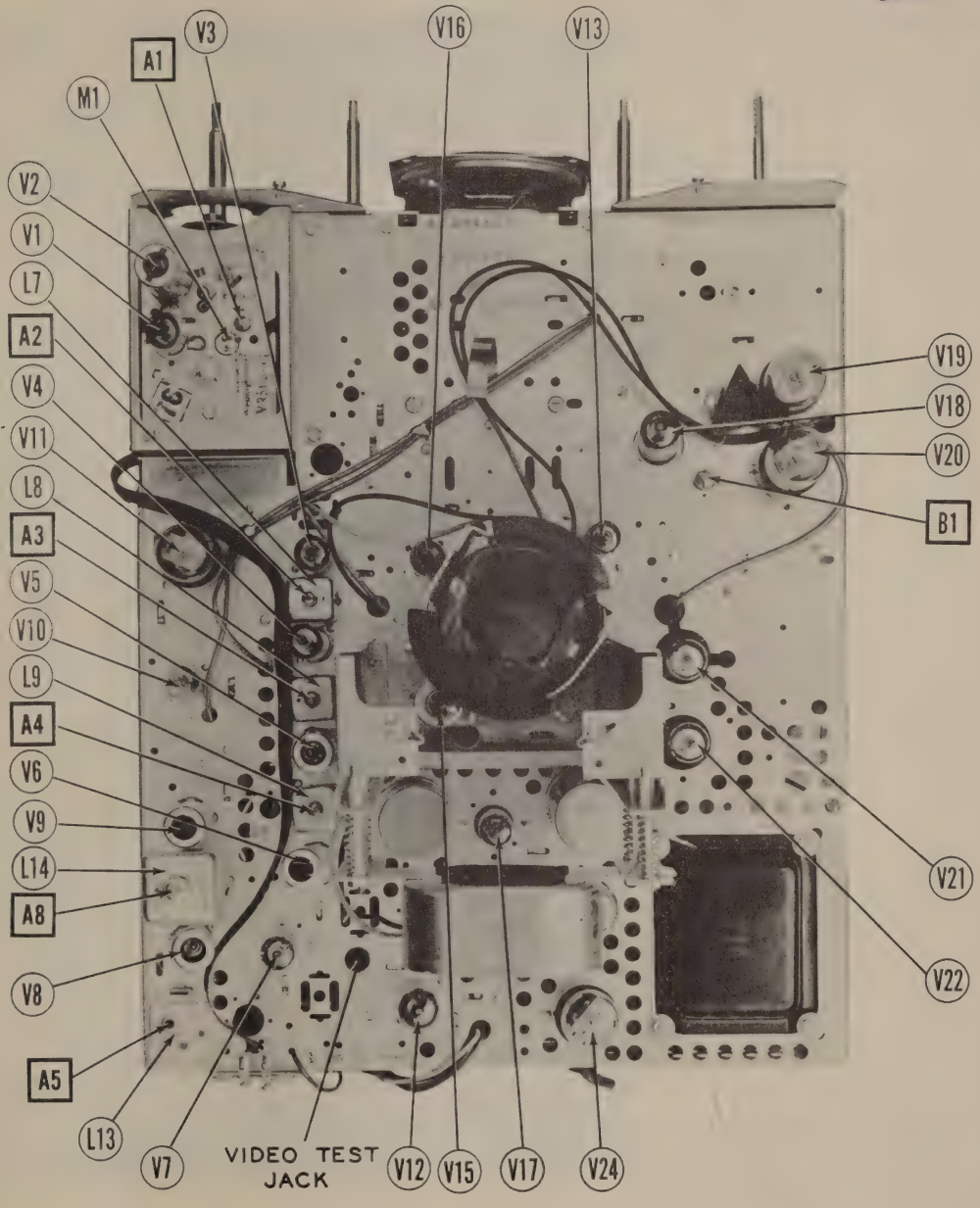
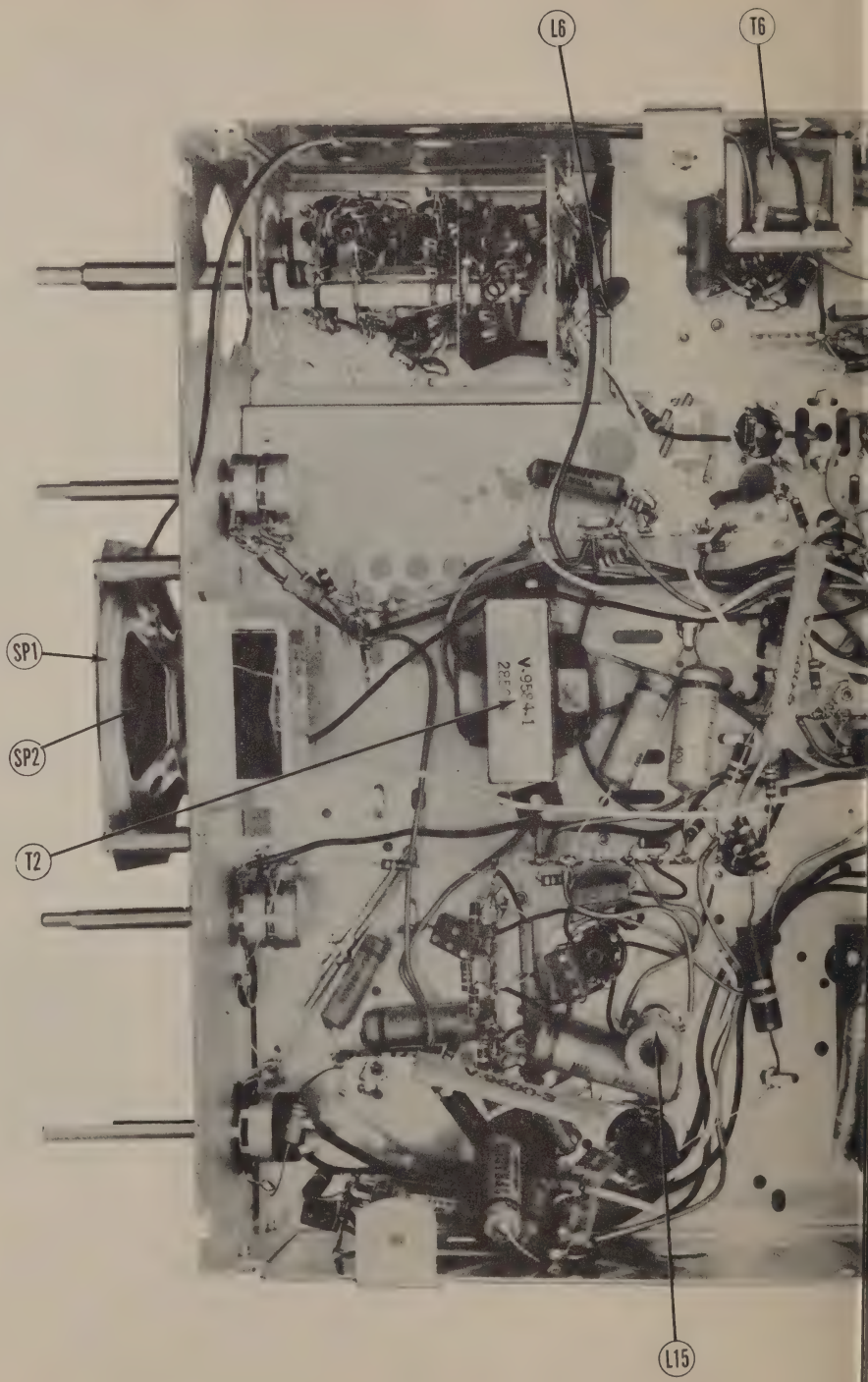


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDU

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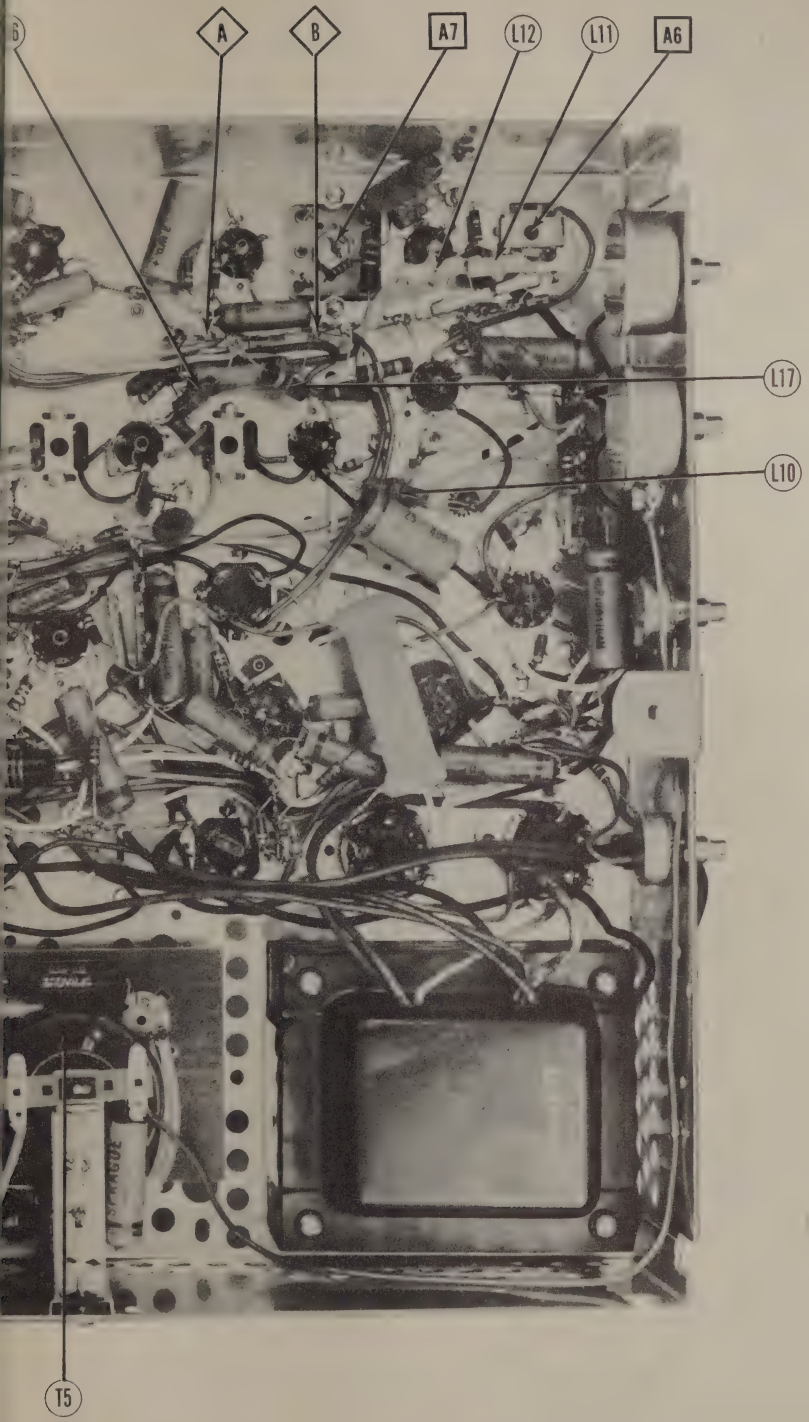

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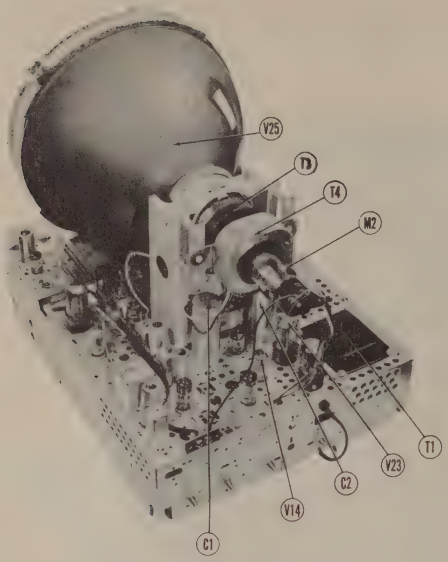
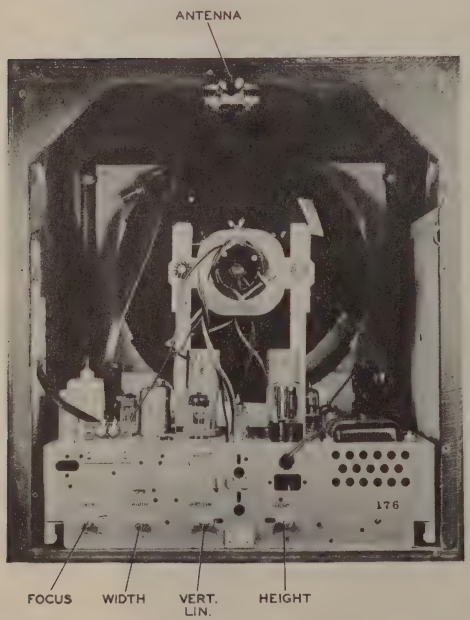


CHASSIS-TOP VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the receiver on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal width control until the picture fills the mask horizontally.

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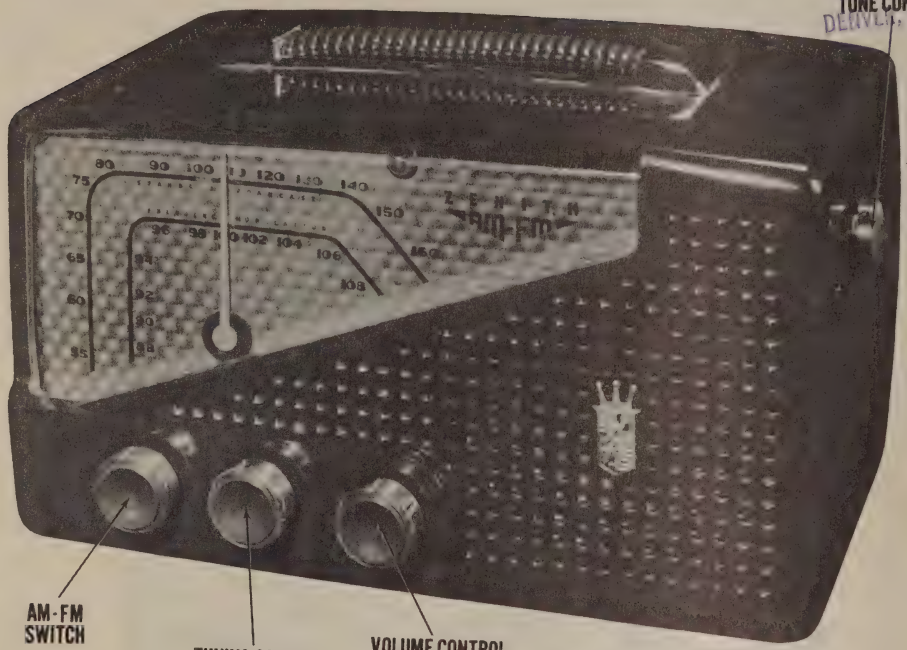
ZENITH
MODEL G724 (Ch. 7G02)



ZENITH
MODEL G724 (Ch. 7G02)

ZENITH MODEL G724

TRADE NAME	Zenith, Model G724 (Ch. 7G02)		
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois		
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver with Loop Antenna		
TUBES (SEVEN)	Types 12BA6 FM RF Amp., 12AT7 Converter, 12BA6 1st FM IF-AM IF Amp., 12BA6 2nd FM IF Amp., 12AU6 Limiter, 19T8 Disc.-DET-AVC-AF, 35B5 Power Output		
POWER SUPPLY	110-120 Volts AC-DC	RATING	.31 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	540-1620KC	FREQ. MOD.	88-108MC

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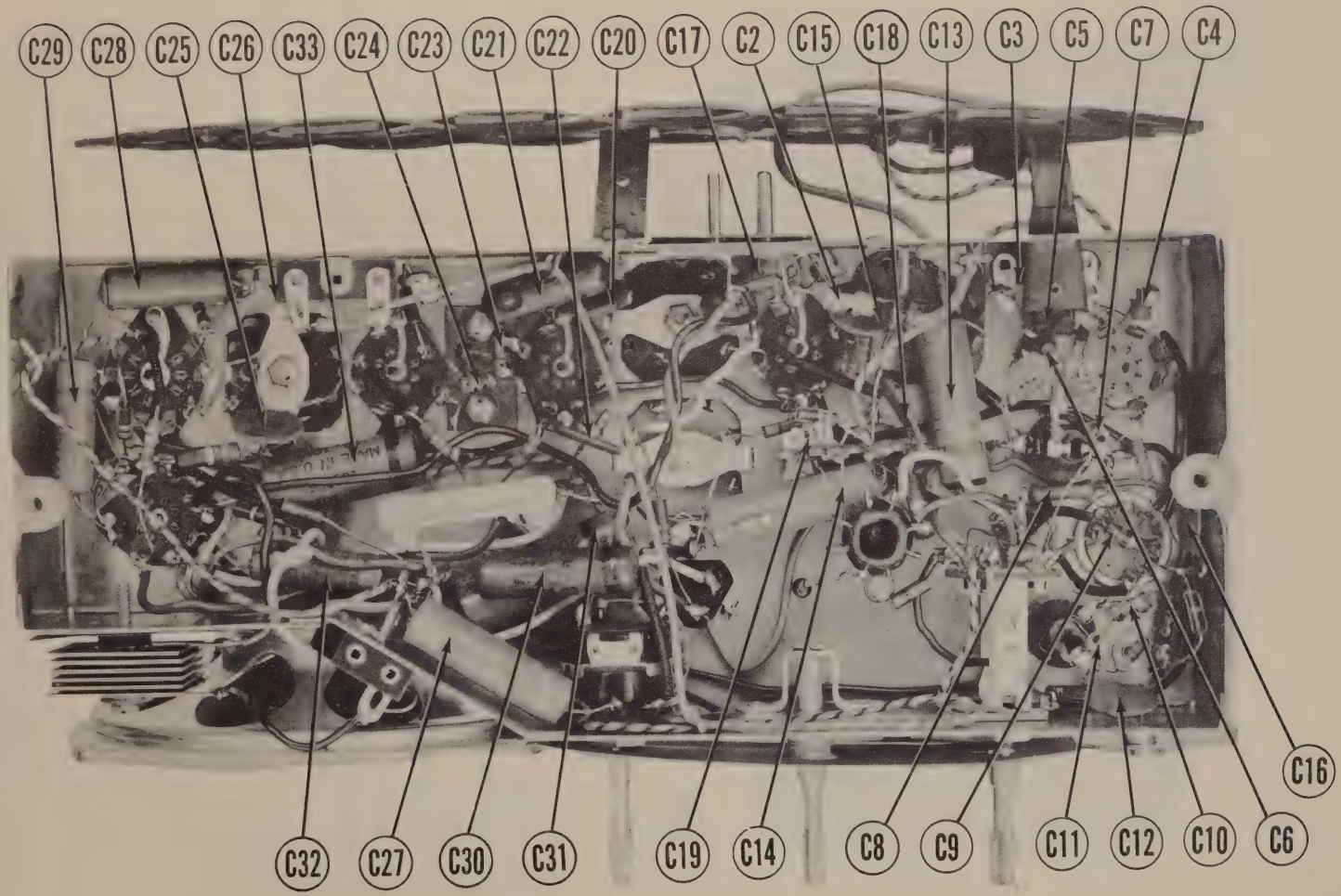
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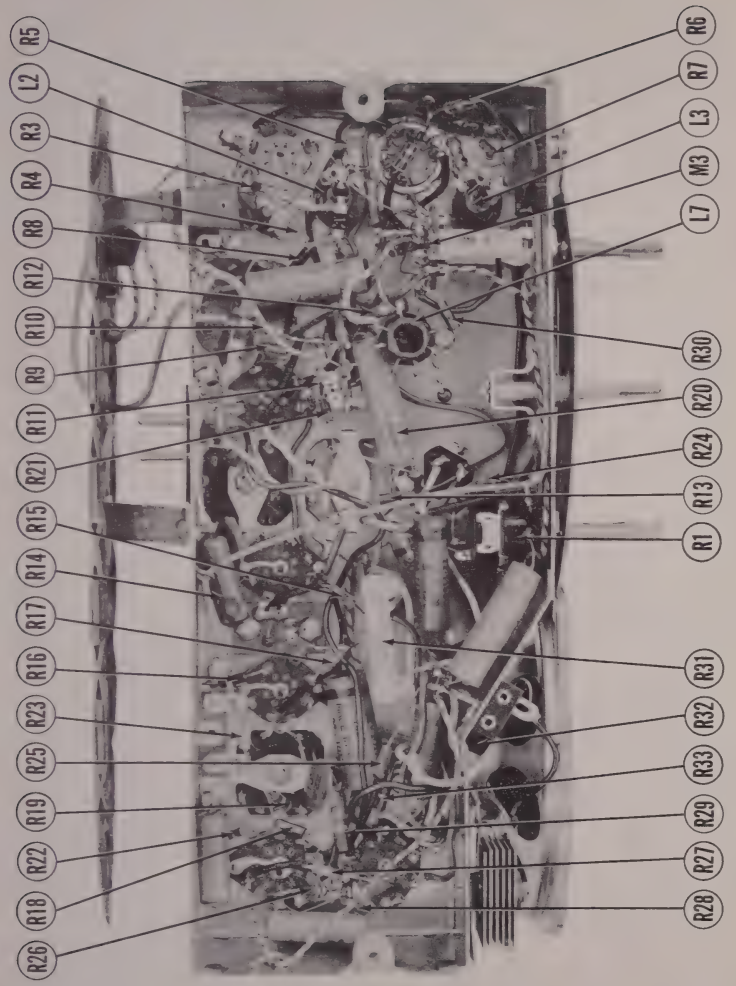

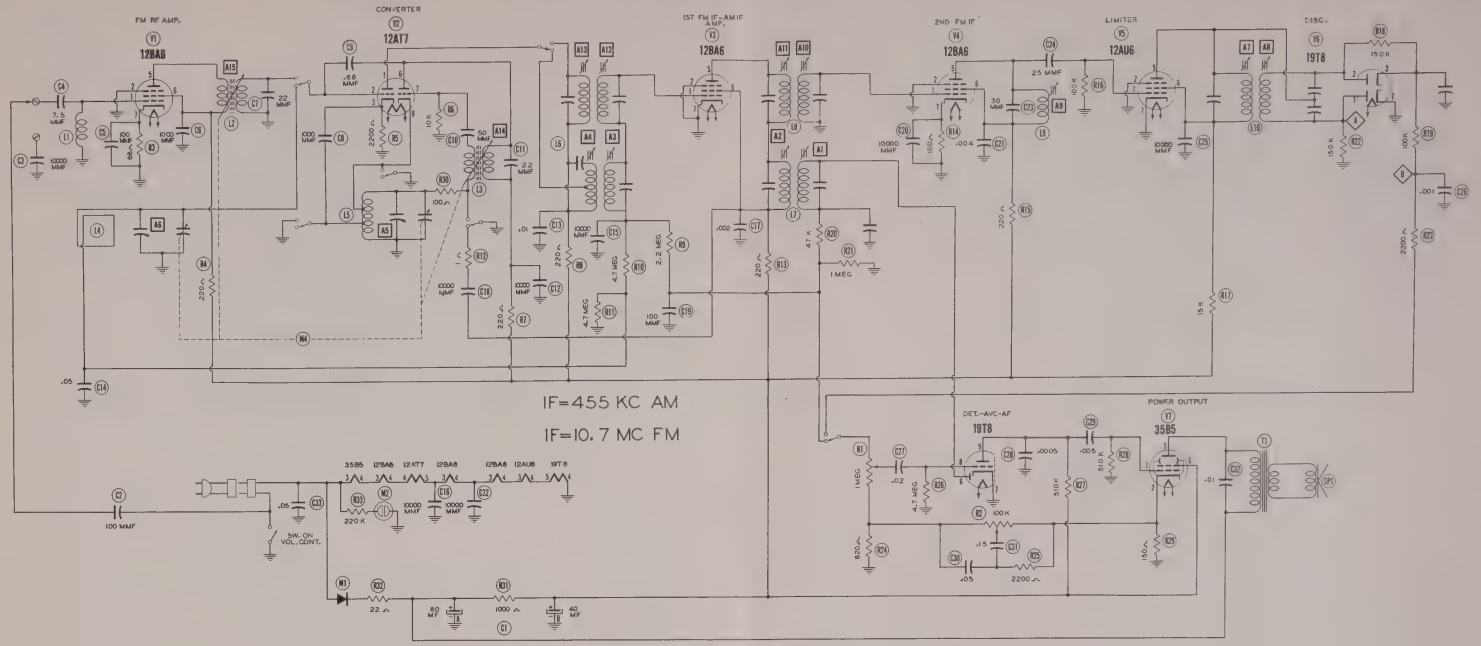

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BA6	0V.	0V.	82VAC	88VAC	80VDC	85VDC	.1VDC		
† V2	12AT7	85VDC	0V.	2VDC	68VAC	31VAC	85VDC	1.2VDC	0V.	82VAC
# V2	12AT7	85VDC	-.1VDC	1.8VDC	68VAC	31VAC	85VDC	1.3-2.2VDC	0V.	82VAC
† V3	12BA6	-.3VDC	0V.	51VAC	46VAC	80VDC	80VDC	0V.		
# V3	12BA6	-.3VDC	0V.	57VAC	46VAC	80VDC	80VDC	0V.		
† V4	12BA6	0V.	0V	46VAC	33VAC	90VDC	90VDC	1.2VDC		
† V5	12AU6	0V.	0V.	33VAC	18VAC	60VDC	60VDC	0V.		
† V6	19T8	-.5VDC	-.5VDC	-.1VDC	0V.	18VAC	-.5VDC	0V.	-.5VDC	34VDC
# V6	19T8	-.5VDC	-.5VDC	-.1VDC	0V.	18VAC	-.5VDC	0V.	-.5VDC	34VDC
# V7	35B5	0V.	5.2VDC	117VAC	82VAC	125VDC	85VDC	0V.		

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
† V1	12BA6	0Ω	0Ω	75Ω	66Ω	11.2KΩ	68Ω			
† V2	12AT7	11.2KΩ	0Ω	2.2KΩ	86Ω	56Ω	11.2KΩ	10KΩ	0Ω	60Ω
# V2	12AT7	11.2KΩ	3.3 Meg	2.2KΩ	98Ω	56Ω	11.2KΩ	10KΩ	3Ω	60Ω
† V3	12BA6	2.7 Meg.	0Ω	56Ω	43Ω	11.2KΩ	11.2KΩ	0Ω		
# V3	12BA6	2.4 Meg.	0Ω	56Ω	43Ω	11.2KΩ	11.2KΩ	0Ω		
† V4	12BA6	4Ω	0Ω	43Ω	31Ω	11.2KΩ	11.2KΩ	100Ω		
† V5	12AU6	100KΩ	0Ω	25Ω	19Ω	11MΩ	11MΩ	0Ω		
† V6	19T8	130KΩ	130KΩ	330KΩ	0Ω	19Ω	1 Meg.	0Ω	6.7 Meg.	151KΩ
# V6	19T8	150KΩ	150KΩ	300KΩ	0Ω	19Ω	500KΩ	0Ω	6.7 Meg.	151KΩ
# V7	35B5	510KΩ	150Ω	107Ω	78Ω	13200Ω	13200Ω	510KΩ		

TAKEN IN "FM" POSITION.
TAKEN IN "AM" POSITION.
† MEASURED FROM OUTPUT OF M1.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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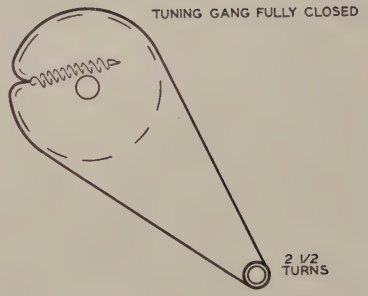
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA ZENITH PART No.	SYLVANIA PART No.		NOTES
M1	.080ADC	212-7	NC-5		

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Neon Lamp	100-105	NE51
M3	Switch	85-481	AM-FM
M4	2 Gang Var. Cap.	22-1752	(23-257MMF, 30-205MMF)
	Dial Scale	26-442	
	Dial Pointer	59-243	
	Cabinet	14-1233	
	Knob	46-844	AM-FM
	Knob	46-811	Tuning, Volume
	Knob	46-780	Tone



DIAL CORD DRIVE

PARTS LIST AND DESCRIP[illegible]d)

RESISTO[illegible]

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA IRC PART No.
R3	68Ω	1/2	63-1737	BW-1/2-68
R4	220Ω	1/2	63-1758	BW-1/2-220
R5	2200Ω	1/2	63-1800	BTS-2200
R6	10KΩ	1/2	63-1828	BTS-10K
R7	220Ω	1/2	63-1758	BW-1/2-220
R8	220Ω	1/2	63-1758	BW-1/2-220
R9	2.2 Meg.	1/2	63-1926	BTS-2.2 Meg.
R10	4.7 Meg.	1/2	63-1940	BTS-4.7 Meg.
R11	4.7 Meg.	1/2	63-1940	BTS-4.7 Meg.
R12	1Ω	1/2	63-1223	BW-1/2-1
R13	220Ω	1/2	63-1758	BW-1/2-220
R14	100Ω	1/2	63-1744	BW-1/2-100
R15	220Ω	1/2	63-1758	BW-1/2-220
R16	100KΩ	1/2	63-1870	BTS-100K
R17	15KΩ	1/2	63-1835	BTS-15K
R18	150KΩ	1/2	63-1876	BTS-150K
R19	100KΩ	1/2	63-1870	BTS-100K
R20	47KΩ	1/2	63-1856	BTS-47K
R21	1 Meg.	1/2	63-1912	BTS-1 Meg.
R22	150KΩ	1/2	63-1876	BTS-150K
R23	2200Ω	1/2	63-1800	BTS-2200
R24	820Ω	1/2	63-1782	BTS-820
R25	2200Ω	1/2	63-1800	BTS-8200
R26	4.7 Meg.	1/2	63-1940	BTS-4.7 Meg.
R27	510KΩ	1/2		BTS-470K
R28	510KΩ	1/2		BTS-470K
R29	150Ω	1/2	63-686	BW-1/2-150
R30	100Ω	1/2	63-1744	
R31	1000Ω	3	63-1527	AB-1000
R32	22Ω	1	63-1450	
R33	220KΩ	1/2	63-1884	BTS-220K

Note 1. Some models use a 470KΩ resistor in this applicati[illegible]

TRANSFORMER (A[illegible]

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEM[illegible] ZENITH PART No.	STANCOR PART No.	[illegible]ATION NOTES
T1	3100Ω	3.6Ω	257Ω	.6Ω	Part of SP1	A-3850 ①	[illegible]ting tabs down and [illegible]riginal bracket.

SPE[illegible]

ITEM No.	RATINGS		REPLACEMENT ZENITH PART No.	JENSEN PART N[illegible]	[illegible]ON NOTES
	FIELD	V. C. IMP.			
SP1	PM	3.6Ω	49-634	525J4	
	CONE DIA.	V. C. DIA.			
SP2	5"	9/16"			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ZENITH PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	FM Ant.	0Ω		S-15690	
L2	FM RF	0Ω	0Ω	S-13871	
L3	FM Osc.	0Ω	0Ω	S-15733	
L4	Loop Ant.	1.5Ω		S-14957	
L5	AM Osc.	6.5Ω		S-15694	
L6	1st AM-FM IF	20Ω	20Ω	S-15695	
L7	2nd AM IF	20.5Ω	20.5Ω	95-1102	16-6660
L8	2nd FM IF	.4Ω	.4Ω	95-1150	16-3487
L9	3rd FM IF	1Ω		S-14509	
L10	Disc. Trans.	.3Ω	.3Ω	95-1153	

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DE[illegible] COLORADO

	SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 5 SET #94 R62 changed from 3900Ω to 4700Ω. Video detector peaking coil L25, Part #SA5489 Sub 0, changed to Part #SA5489 Sub 1. These changes were made to improve frequency response in video amplifier and better balance of horizontal sync circuit.	NATIONAL MODELS NC-TV-10C, T, W, NC-TV-12C, W, NC-TV-1001, NC-TV-1025, NC-TV-1201, NC-TV-1202, NC-TV-1225, NC-TV-1226
	Horizontal output transformer T4 changed to new transformer Part #L255-3. R86 changed from 270K to 220K 1 watt. R93 which consists of two 12K 10 watt resistors connected in parallel changed to two 4200Ω resistors connected in series. These changes were made to standardize one type of transformer and to obtain higher voltage and deflection.	
	C78 and C79 changed from 1000mmf to 500mmf each. These changes were made to correct erratic horizontal sync action or "flagging" on top part of picture.	
	L33 shunted with .05mfd at 500 volts capacitor. This change was made to correct insufficient width in areas having low line voltage.	
	C84 and C87 changed to 270mmf silver mica capacitors, part #H500-6. These changes were made to prevent a change of capacitory of C84 and C87 due to heat. The heat also causes the resistance and Q to decrease, the leakage eventually becoming excessive and permanent. This shows up as loss of horizontal sync action.	
	SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 14, SET #75	RAYTHOEN MODELS A-10DX24, B-10DX22, 10AXF43, 10DX21, 10DX22
Prod. Ch. thru "C"	Photofact folder 75-14 includes changes thru "C" ("C" marked on rear of chassis).	
Prod. Ch. thru "D"	R88 changed from 330Ω to 560Ω. R91 changed from 270Ω to 470Ω. R93 changed from 330K to 180K. R96 changed from 220K to 330K. R105 changed from 47Ω, 1 watt to 220Ω, 5 watt. C107 changed from 150mmf to 560mmf. C6 changed from 8mfd at 300 volts to 330mmf and removed from pin 5 of V21 and connected to pin 8 of V21. C97 changed from .2mfd to .25mfd. C99 and R96 removed. R83 removed from ground and connected to junction of R103 and R107. C107 disconnected from junction of R103 and R117 and connected in series with 5600Ω to ground.	
	SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 17, SET #79	STROMBERG CARLSON MODEL TC-10
	R112 changed from 1 Meg to 680K. R49 changed from 39K to 150K. C27 and C28 changed from 4.2mmf to 4.5mmf. C97 changed from .22mfd to 5mfd at 50 volts. R104 changed from 22K ½ watt to 22K 2 watt. R7 changed from 2.5 Meg to 6 Meg. part #1U5100. R3B changed from 750Ω to 3000Ω part #145105. V1 changed from 6AG5 to 6BC5. A bent metal shield part #151104 is added to cover underside of the first audio amplifier tube socket to prevent extraneous audio pickup.	

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11, SET #96

Codes thru C15 & B14	All production changes thru C15 and B14 are covered in Photofact Folder 96-11 covering this model. (Production change codes are stamped "C" on chassis and "B" on bridge).
Codes thru C18 & B18	C38 changed from .68mmf to 1.5 mmf R34 removed. C44 changed from 9mmf to 4.7 mmf R35 changed from 15K to 12K. 47K added in parallel with L21. C49 changed from 5mmf to 10mmf. C48 disconnected from pin 5 of V6 and connected to pin 1 of V6. R37 changed from 15K to 33K. C50A and C50B changed from .004mfd to .005mfd R38 and C50A disconnected from ground. Cathode IF trap coil added from junction of R38 and C50A to ground. Secondary of trap coil shunted with 50 mmf. C50B connected from pin 6 of V7 to ground. R41 changed from 5.6K to 4.7K. R46 and C59 removed. L29 replaced with new peaking coil part #146-0001. M5, M6 and M7 changed from 1/4A to 3/10A. AGC threshold control, 3K, Part #159-0007 added from pin 5 of V8 to R52. R52 disconnected from R51 and pin 5 of V8. R76 changed from 680K to 470K. R74 changed from 1.5 Meg to 680K. R109 changed from 2.2 Meg to 470K. R110 changed from 56K to 27K. V22 changed from 6BD5GT to 6BQ6GT. R114 changed from 82Ω to 100Ω. R115 changed from 470K to 820K. 10K added in series with screen grid of V22. .05mfd added from pin 4 of V22 to ground. R116 removed. Pin 3 of V22 disconnected from pin 10 of male plug. C10 shunted with 2-470Ω resistors in parallel. The junction of R115 and C10 connected to pin 10 of male plug. A revised tuner unit is used, part #323-0001. A coil is added in parallel with secondary of L3 and mutually inductive with primaries of L3 and L4. C11 changed from 50mmf to 47mmf. C26 changed from 30mmf to 33mmf. V1 and V2 replaced with 6BC5 tubes.

CONTINUED ON REVERSE SIDE

SYLVANIA MODELS
1-076, 1-128 (Ch. 1-108)

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L. F. BLANKENS
3924 MEADE ST
DENVER, COLORA

PRODUCTION CHANGES
BULLETIN 2

PRODUCTION CHANGES
BULLETIN 2

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REVISED TV ALIGNMENT INSTRUCTIONS (Chassis C18)

Steps 2 thru 8 are changed. The following adjustments 2 thru 8B are to be performed in place of steps 2 thru 8.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Direct	High side to ungrounded tube shield floating over converter tube (V3). Low side to chassis.	Not used	21.9MC (Unmod.)	Any	Use VTVM. DC Probe and common leads across R43.	A5 and Cathode IF Trap Coil	Adjust for minimum deflection.
3.	Direct	"	"	27.9MC	"	"	A4	"
4.	Direct	"	"	20.4MC	"	"	A3	"
5.	Direct	"	"	26.1MC	"	"	A6	Adjust for maximum deflection.
6.	Direct	"	"	22.8MC	"	"	A7	"
7.	Direct	"	"	25.0MC	"	"	A8	"
8A.	Direct	"	"	23.7MC	"	"	A9	"
B.	Direct	"	"	21.9MC	"	"	A5 and Cathode IF Trap Coil	Adjust for minimum deflection.

AGC CONTROL ADJUSTMENT

1. Connect antenna and tune to channel not used locally.
2. Set contrast control in mid-position and AGC control to full counter clockwise position.
3. Connect a VTVM from pin 6 of V15 to ground and set AGC control to obtain .1 volt reading.
4. Turn contrast control to nearly maximum and tune in the strongest station available.
5. If VTVM reading is less than -2 volts leave AGC control set and secure with glyptal.
6. If reading is more than -2 volts slowly turn AGC control clockwise observing the picture. The picture will slowly get darker and fall out of sync.
7. Back off (counter-clockwise) slowly until picture holds in sync and turn slightly beyond.
8. Rock tuning control slightly back and forth to see if picture stays in sync.
9. Turn volume control to normal level and observe if intercarrier buzz is negligble. If not turn AGC still further counter clockwise. If too much intercarrier buzz is present the sound section requires realignment.
10. The intent of the AGC control adjustment is to provide a maximum of AGC action consistent with proper sync and minimum intercarrier buzz on strong signals.